UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:	)	ADMINISTRATIVE SETTLEMENT
	)	AGREEMENT AND ORDER ON
Matthiessen and Hegeler Zinc	)	CONSENT FOR REMEDIAL
Company Site, LaSalle,	)	INVESTIGATION AND FEASIBILITY
LaSalle County, Illinois	)	STUDY
	)	
Carus Corporation and Carus	)	U.S. EPA Region 5
Chemical Company	)	CERCLA Docket No.
	)	
Respondents	)	
	)	
	)	Proceeding Under Sections 104, 107 and
	)	122 of CERCLA

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY

I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent ("Settlement Agreement") is entered into by the United States Environmental Protection Agency ("U.S. EPA") and Carus Corporation and Carus Chemical Company ("Carus Chemical" or "Respondents") in order to expedite response actions and minimize litigation. The Settlement Agreement concerns the Respondents' participation in the preparation and performance of a remedial investigation and feasibility study related to Operable Unit # 1 (OU1) at the Matthiessen and Hegeler Zinc Company site located in the City of LaSalle, LaSalle County, Illinois ("Site"), the U.S. EPA's cooperation with Respondents and their contractors in the joint preparation of a comprehensive remedial investigation report and a comprehensive feasibility study ("RI/FS") for the Site as a whole, and the reimbursement of past response costs incurred by U.S. EPA and future response costs to be incurred by U.S. EPA in connection with its oversight of Respondent's portion of the RI/FS.

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9607 and 9622 ("CERCLA"). This authority was delegated to the Administrator of U.S. EPA on January 23, 1987, by Executive

Order 12580, 52 Fed. Reg. 2926 (Jan. 29, 1987), and further delegated to Regional Administrators on May 11, 1994, by U.S. EPA Delegation Nos. 14-14-C and 14-14-D. This authority was further redelegated by the Regional Administrator of EPA Region 5 to the Superfund Division Director on May 2, 1996 by U.S. EPA Delegation Nos. 14-14-A, 14-14-C and 14-14-D.

3. In accordance with Section 104(b)(2) and Section 122(j)(1) of CERCLA, 42 U.S.C. §§ 9604(b)(2) and 9622(j)(1), U.S. EPA notified the Federal natural resource trustee of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under Federal trusteeship. In accordance with Section 121(f)(1)(F), U.S. EPA has notified the State of Illinois of negotiations with potentially responsible parties regarding the implementation of the remedial investigation and feasibility study for the Site.

4. U.S. EPA and Respondents recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Respondents in accordance with this Settlement Agreement do not constitute an admission of any liability or establish any precedent for remedial actions at the Site or any other response action beyond the scope of this Settlement Agreement. Respondents do not admit, and retain the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of the findings of fact, conclusions of law and determinations in Sections V and VI of this Settlement Agreement. Respondents agree to comply with and be bound by the terms of this Settlement Agreement and further agree that they will not contest the basis or validity of this Settlement Agreement or its terms.

II. PARTIES BOUND

5. This Settlement Agreement applies to and is binding upon U.S. EPA and upon Respondents and their agents, heirs, successors and assigns. Any change in ownership or corporate status of a Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondent's responsibilities under this Settlement Agreement.

6. Respondents are jointly and severally liable for carrying out all activities required by this Settlement Agreement. In the event of the insolvency or other failure of any one or more Respondents to implement the requirements of this Settlement Agreement, the remaining Respondents shall complete all such requirements.

7. Respondents shall ensure that their contractors, subcontractors, and representatives receive a copy of this Settlement Agreement and comply with this Settlement Agreement. Respondents shall be responsible for any noncompliance with this Settlement Agreement.

8. Each undersigned representative of Respondents certifies that he or she is fully authorized to enter into the terms and conditions of this Settlement Agreement and to execute and legally bind the Respondents to this Settlement Agreement.

III. STATEMENT OF PURPOSE

9. In entering into this Settlement Agreement, the objectives of U.S. EPA and Respondents are: (a) to determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at or from OU1, by conducting a Remedial Investigation ("RI") as more specifically set forth in the Statement of Work ("SOW") attached as Attachment A to this Settlement Agreement; (b) to collect sufficient data for developing and evaluating effective remedial alternatives for OU1; (c) to identify and evaluate alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site, by conducting a Feasibility Study ("FS") as more specifically set forth in the SOW in Attachment A to this Settlement Agreement; (d) to provide for U.S. EPA's cooperation with Respondents' contractor in the joint preparation of one comprehensive RI/FS for the Site; and (e) to recover past response costs incurred by U.S. EPA and future response and oversight costs to be incurred by U.S. EPA with respect to overseeing the Work to be performed by the Respondents under this Settlement Agreement.

10. The Work conducted under this Settlement Agreement is subject to approval by U.S. EPA and shall provide all appropriate and necessary information to assess Site conditions and evaluate alternatives to the extent necessary to select a remedy that will be consistent with CERCLA and the National Oil and Hazardous Substance Pollution Contingency Plan, 40 C.F.R. Part 300 ("NCP"). Respondents shall conduct all Work under this Settlement Agreement in compliance with CERCLA, the NCP and all applicable U.S. EPA guidances, policies, and procedures.

IV. DEFINITIONS

11. Unless otherwise expressly provided herein, terms used in this Settlement Agreement which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

a. "ARARs" mean all applicable local, state, and Federal laws and regulations, and all "applicable requirements" or "relevant and appropriate requirements" as defined at 40 C.F.R. § 300.5 and 42 U.S.C. § 9261(d).

b. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq*.

c. "Day" shall mean a calendar day. In computing any period of time under this Settlement Agreement, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

d. "Effective Date" shall be the effective date of this Settlement Agreement as provided in Section XXIX.

e. "EPA" or "U.S. EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

f. "IEPA" shall mean the Illinois Environmental Protection Agency and any successor departments or agencies of the State.

g. "Engineering Controls" shall mean constructed containment barriers or systems that control one of the following: downward migration, infiltration or seepage of surface runoff or rain; or natural leaching migration of contaminants through the subsurface over time. Examples include caps, engineered bottom barriers, immobilization processes, and vertical barriers.

h. "Future Response Costs" shall mean all oversight costs relating to the Work to be performed by Respondents pursuant to this Settlement Agreement, including, but not limited to, direct and indirect costs that the United States incurs in reviewing or developing plans, reports, technical memoranda

and other items pursuant to this Settlement Agreement, the costs of conducting community relations efforts, providing technical assistance grants to community groups (if any), verifying the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, ATSDR costs, the costs incurred pursuant to Paragraph 51 or 53 (costs and attorneys fees and any monies paid to secure access, including the amount of just compensation) and Paragraph 37 (emergency response). Future Response Costs shall also include all Interim Response Costs, and all Interest on those Past Response Costs Respondents have agreed to reimburse under this Settlement Agreement that has accrued pursuant to 42 U.S.C. § 9607(a) during the period from August 31, 2005, to the Effective Date of this Settlement Agreement.

i. "Institutional controls" shall mean non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land and/or resource use. Examples of institutional controls include easements and restrictive covenants, zoning restrictions, special building permit requirements, and well drilling prohibitions.

j. "Interest" shall mean interest at the rate specified for interest on investments of the U.S. EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

k. "Interim Response Costs" shall mean all costs, including direct and indirect costs, (a) paid by the United States in connection with the Site between August 31, 2005, and the Effective Date, or (b) incurred prior to the Effective Date, but paid after that date.

l. "NCP" or "National Contingency Plan" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

m. "Operable Unit #1" or "OU1" shall mean, for purposes of this Settlement Agreement only, the entire six-acre slag pile area located adjacent to the Little Vermilion River, the Little Vermilion River and its sediments, and the entire portion of the Site that is owned by Carus Chemical Company located at 1500 Eighth Street, LaSalle, Illinois.

n. Operable Unit #2" or "OU2" shall mean, for purposes of this Settlement Agreement only, the remaining portion of the Site not included in Operable Unit #1, including the surrounding residential area.

o. "Settlement Agreement" shall mean this Administrative Settlement Agreement and Order on Consent, the SOW, all appendices attached hereto (listed in Section XXVII) and all documents incorporated by reference into this document including without limitation U.S. EPA-approved submissions. U.S. EPA-approved submissions (other than progress reports) are incorporated into and become a part of the Settlement Agreement upon approval by U.S. EPA. In the event of conflict between this Settlement Agreement and any appendix, this Settlement Agreement shall control.

p. "Paragraph" shall mean a portion of this Settlement Agreement identified by an Arabic numeral. References to paragraphs in the SOW will be so identified (for example, "SOW paragraph 15").

q. "Parties" shall mean U.S. EPA and Respondents.

r. "Past Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs that the United States paid at or in connection with the Site on or before August 31, 2005, plus Interest on all such costs which has accrued pursuant to 42 U.S.C. § 9607(a) through such date.

s. "RCRA" shall mean the Resource Conservation and Recovery Act, also known as the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.*

t. "RI/FS Planning Documents" shall mean the Work Plan/Field Sampling Plan, Quality Assurance Project Plan and Health and Safety Plan.

t. "Respondents" shall mean Carus Corporation and Carus Chemical Company.

u. "Section" shall mean a portion of this Settlement Agreement identified by a Roman numeral. References to sections in the SOW will be so identified (for example as "SOW Section V").

v. "Site" shall mean the Matthiessen and Hegeler Zinc Company Superfund Site, as generally depicted on Appendix B, located on the east side of LaSalle, Illinois (its legal description includes it as being parts of the

Southeast Quarter of Section Ten; the Southwest Quarter of Section Eleven; the Northwest Quarter of Section Fourteen and the Northeast Quarter of Section Fifteen, all in Township Thirty-three North, Range One East, of the Third Principal Meridian in LaSalle County, Illinois) and any off-property areas where hazardous substances, pollutants or contaminants from the property or from former operations on the property have come to be located.

w. "State" shall mean the State of Illinois.

x. "Statement of Work" or "SOW" shall mean the Statement of Work for development of the portion of the RI/FS related to OU1 at the Site, as set forth in Appendix A to this Settlement Agreement. The Statement of Work is incorporated into this Settlement Agreement and is an enforceable part of this Settlement Agreement as are any modifications made thereto in accordance with this Settlement Agreement.

y. "Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and (4) any "hazardous material" as defined under State law.

z. "Work" shall mean all activities Respondents are required to perform under this Settlement Agreement, except those required by Section XIV (Retention of Records).

V. FINDINGS OF FACT

12. The Site occupies approximately 160 acres where an inactive primary zinc smelting and rolling facility are located in the City of LaSalle, Illinois (population 9,646). Situated on the southern portion of the Site is an active chemical manufacturing plant, Carus Chemical Company. The Site itself is surrounded by the Little Vermilion River on the east side and by private residences on the west, south and north sides. North and east of the Site and across the river lie farmland and a limestone quarry, respectively. The City of LaSalle obtains all of their drinking water from a cluster of four active wells located three-quarters of a mile south of the Site, with the nearest municipal well approximately 3,700 feet south of the Site. An abandoned sewer line runs across the property which serves as a mechanism to transport surface water runoff directly to the Little Vermilion River, which then flows into the Illinois River. There is a wetland located approximately ½ mile upstream of the Site on the Little Vermilion River. Also, the Lake DePue Fish and Wildlife Area and the

Spring Lake Heron Colony, which provides breeding habitat for the state endangered Great Egret, are situated about 15 miles downstream of the Site.

13. The Matthiessen and Hegeler Zinc Co. began operations in 1858. Raw materials such as zinc ore and various grades of coal were transported onto the Site in order to smelt zinc. Coal was also provided from mines at the Site. A rolling mill was built on-Site in 1866 to produce zinc sheets. The furnace used in this process used producer gas as fuel and any sulfur dioxide that was generated was recovered and converted into sulfuric acid where it was stored in tanks on-Site and sold. The Site also had an ammonium sulfate fertilizer plant which utilized some of the sulfuric acid generated, but only operated for a few years during the early 1950s. The mining of coal on-Site was discontinued in 1937 and the smelting of zinc ceased in 1961. The manufacture of sulfuric acid was stopped in 1968, and from this time until bankruptcy was declared in 1978, the facility only performed the rolling mill operations. The land where the rolling mill was located was purchased by Fred and Cynthia Carus in 1980 either directly or through a land trust.

Carus Chemical has been in operation at the Site since 1915. Various chemicals are produced at the chemical plant, including potassium permanganate. Wastewater generated during production of potassium permanganate is discharged to a treatment pond, and eventually into the Little Vermilion River pursuant to an NPDES permit. Solid wastes generated from manufacturing activities are transported off-Site to a permitted landfill used solely by Carus Chemical.

14. The Site was listed on the National Priorities List (NPL) on September 29, 2003, pursuant to CERCLA Section 105, 42 U.S.C. Section 9605. Two primary sources located on the property were used to score this Site for the NPL. The first source (Source #1) scored at the Site is a six-acre wastepile located in the southeast portion of the former smelting facility property, along the bank of the Little Vermilion River. Source #1 is included within OU1, as defined herein. This wastepile is composed of waste material generated from the primary zinc smelting process. It is unknown exactly when the pile began to accumulate, but wastes have not been added to the pile since the primary smelter ceased operations circa 1961. Runoff from the wastepile flows directly into the river. In December 1993, the Illinois Environmental Protection Agency collected three samples from the wastepile during their CERCLA Integrated Assessment sampling event (1993 Assessment). The materials sampled consisted of slag material which was a byproduct of the on-Site smelting operations. The material sampled did not contain any soil and was described as a "coarse, black, coal-like" material. The hazardous substances which were

detected in these three samples include: cadmium (maximum: 181 mg/kg); chromium (maximum: 43.3 mg/kg); copper (maximum: 4,340 mg/kg); lead (maximum: 1,370 mg/kg); nickel (maximum: 118 mg/kg); and zinc (maximum: 42,000 mg/kg).

The second source (Source #2) scored at the Site is a shallow wastepile which is located on the former smelter property and included within the scope of OU2, as defined herein. The contaminants discovered in the samples which define Source #2 appear to be the result of activities associated with the former zinc smelter and ancillary operations. The current limits of Source #2 were defined by five samples collected from portions of the former smelter property during the December 1993 Assessment. The material sampled consisted of black, cindery slag material which was a byproduct of the on-Site smelting operations. The hazardous substances which were detected in these five samples include: pentachlorophenol (maximum 36 mg/kg); cadmium (maximum: 1,320 mg/kg); copper (maximum: 3,650 mg/kg); lead (maximum: 4,310 mg/kg); and zinc (maximum: 71,200 mg/kg).

15. Some of the hazardous substances that were detected at the Site may have migrated into the Little Vermilion River. During the November 1991 CERCLA Screening Site Inspection and the 1993 Assessment conducted by Illinois EPA, an observed release to surface water was documented by chemical analysis when several sediment samples collected from the Little Vermilion River were found to contain levels of cadmium, copper, chromium, lead, nickel and zinc. Runoff from the shallow wastepile (Source #2) flows into the Little Vermilion River through natural drainage pathways and also through drainage which enters an old abandoned and collapsed storm sewer line which was formerly used by the City of LaSalle. A 1988 aerial photograph and photographs taken during the 1991 Screening Site Inspection at Carus Chemical and the 1993 Assessment provide documentation that the waste pile (Source #1) has been in contact with the Little Vermilion River since at least 1988. The waste pile has actually been in contact with the Little Vermilion River for many more years than that as the waste pile resulted from the dumping of waste materials during the time when the smelter was in operation. It has been observed that a portion of this slag is now located in the Little Vermilion River.

16. During the 1993 Assessment, several soil samples collected from nearby residential properties were found to contain elevated levels of metals associated with the Site. In addition, the fence surrounding portions of the former smelter operation contains holes and trespassers have been observed on the property during Site visits. This accessibility of the Site may pose a risk to any persons who venture onto the Site either through the fence or through the

river. Also, the Little Vermilion River has been identified as a fishery populated with small mouth bass, bluegill, sunfish, crappie, channel catfish bullheads, carp and drum fish. Contamination from the Site that is allowed to enter the river could directly threaten any wildlife or fish populations located near the Site. Some of these contaminants may be transferred up the food chain and be a source of exposure to any human who consumes contaminated fish or wildlife.

17. Health effects associated with contaminants of concern present at the Site:

Arsenic - Ingesting high levels of inorganic arsenic can result in death. Lower levels of arsenic can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet. Chronic exposure to inorganic arsenic can cause darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso. Several studies have shown that inorganic arsenic can increase the risk of lung cancer, skin cancer, bladder cancer, liver cancer, kidney cancer, and prostate cancer;

Cadmium - Chronic inhalation and oral exposure of humans to cadmium results in a build-up of cadmium in the kidneys that can cause kidney disease, including proteinuria, a decrease in glomerular filtration rate, and an increased frequency of kidney stone formation. Other effects noted in occupational settings from chronic exposure of humans to cadmium in air are effects on the lung, including bronchiolitis and emphysema. U.S. EPA considers cadmium to be a probable human carcinogen based on studies of the inhalation pathway and has classified it as a Group B1 carcinogen;

Lead - If not detected early, children with high levels of lead in their bodies can suffer from damage to the brain and nervous system, behavior and learning problems (such as hyperactivity), slowed growth, hearing problems, and headaches. Lead is also harmful to adults. Adults can suffer from difficulties during pregnancy and other reproductive problems (in both men and women), high blood pressure, digestive problems, nerve disorders, memory and concentration problems and muscle and joint pain;

Pentachlorophenol - Pentachlorophenol is extremely toxic when ingested by humans. Acute inhalation exposure to pentachlorophenol in humans may result in effects on the cardiovascular system, blood, liver (jaundice), and eyes (visual damage and irritation). Neurological effects reported following exposure of humans to high levels of pentachlorophenol include lethargy, tachypnea, tachycardia, delirium, and convulsions. Chronic exposure by inhalation to pentachlorophenol in humans has resulted in inflammation of the upper respiratory tract and bronchitis, blood effects such as aplastic anemia, effects on the kidney and liver, immunological effects, and irritation of the eyes,

nose, and skin. Chronic oral exposure to pentachlorophenol in animals has resulted in effects on the liver, kidney, blood, endocrine, immune system, and Central Nervous System. U.S. EPA has classified pentachlorophenol as a Group B2, probable human carcinogen.

18. Carus Chemical is the present owner of a portion of the property underlying OU1.

VI. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, and the Administrative Record in this matter, U.S. EPA has determined that:

19. The Matthiessen and Hegeler Zinc Co. Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

20. The contamination found at the Site, as identified in the Findings of Fact above, includes "[a]ny pollutant or contaminant" that may present an imminent and substantial danger to public health or welfare under Section 104(a)(1) of CERCLA.

21. The conditions described above in Paragraphs 14 and 15 of the Findings of Fact constitute an actual or threatened "release" of a hazardous substance from the facility as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

22. Each Respondent is a "person" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

23. Respondents are responsible parties under Sections 104, 107 and 122 of CERCLA, 42 U.S.C. §§ 9604, 9607 and 9622. Each Respondent is a person who either owned the Site at the time of disposal of hazardous substances or is the present "owner(s)" and/or "operator(s)" of the facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) and (2) of CERCLA, 42 U.S.C. § 9607(a)(1) and (2). Each Respondent therefore may be liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

24. The actions required by this Settlement Agreement are necessary to protect the public health, welfare or the environment, are in the public interest, 42 U.S.C. § 9622(a), are consistent with CERCLA and the NCP, and will expedite effective remedial action and minimize litigation, 42 U.S.C. § 9622(a).

25. U.S. EPA has determined that Respondents are qualified to conduct the RI/FS within the meaning of Section 104(a) of CERCLA, 42 U.S.C. § 9604(a), and will carry out the Work properly and promptly, in accordance with Sections 104(a) and 122(a) of CERCLA, 42 U.S.C. §§ 9604(a) and 9622(a), if Respondents comply with the terms of this Settlement Agreement.

VII. SETTLEMENT AGREEMENT AND ORDER

26. Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for this Site, it is hereby agreed and ordered that Respondents shall comply with all provisions of this Settlement Agreement, including, but not limited to, all attachments to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

VIII. DESIGNATION OF CONTRACTORS AND PROJECT COORDINATORS

27. Selection of Contractors, Personnel. All Work performed under this Settlement Agreement shall be under the direction and supervision of qualified personnel. Within 30 days of the Effective Date of this Settlement Agreement, and before the Work outlined below begins, Respondents shall notify U.S. EPA in writing of the names, titles, and qualifications of the personnel, including contractors, subcontractors, consultants and laboratories to be used in carrying out such Work. With respect to any proposed contractor, Respondents shall demonstrate that the proposed contractor has a quality system which complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by U.S. EPA. The qualifications of the persons undertaking the Work for Respondents shall be subject to U.S. EPA's review, for verification that such persons meet minimum technical background and experience requirements. This Settlement Agreement is contingent on Respondents' demonstration to U.S. EPA's satisfaction that Respondents are qualified to perform properly and promptly the actions set forth in this Settlement Agreement. If U.S. EPA disapproves in writing of any person(s)' technical qualifications, Respondents shall notify U.S. EPA of the identity and qualifications of the replacement(s) within 30 days of the written notice. If U.S.

EPA subsequently disapproves of the replacement(s), U.S. EPA reserves the right to terminate this Settlement Agreement and to conduct a complete RI/FS, and to seek reimbursement for costs and penalties from Respondents. During the course of the RI/FS, Respondents shall notify U.S. EPA in writing of any changes or additions in the personnel used to carry out such Work, providing their names, titles, and qualifications. U.S. EPA shall have the same right to disapprove changes and additions to personnel as it has hereunder regarding the initial notification.

28. Within 10 days after the Effective Date, Respondents shall designate a Project Coordinator who shall be responsible for administration of all actions by Respondents required by this Settlement Agreement and shall submit to U.S. EPA the designated Project Coordinator's name, address, telephone number, and qualifications. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site Work. U.S. EPA retains the right to disapprove of the designated Project Coordinator. If U.S. EPA disapproves of the designated Project Coordinator, Respondents shall retain a different Project Coordinator and shall notify U.S. EPA of that person's name, address, telephone number and qualifications within 10 days following U.S. EPA's disapproval.

29. U.S. EPA has designated Demaree Collier of the Superfund Division, Region 5 as its Project Coordinator. U.S. EPA will notify Respondents of a change in its designation of the Project Coordinator. Except as otherwise provided in this Settlement Agreement, Respondents shall direct all submissions required by this Settlement Agreement to:

Demaree Collier
Remedial Project Manager
U.S. EPA, Superfund Division
77 West Jackson Boulevard, SR-6J
Chicago, Illinois 60604

Respondents are encouraged to make their submissions to U.S. EPA on recycled paper (which includes significant post-consumer waste paper content where possible) and using two-sided copies. Respondents shall make submissions electronically according to U.S. EPA Region 5 specifications. Receipt by Respondents' Project Coordinator of any notice or communication,

except for any notice or communication related to a change in the terms of this Settlement Agreement, from U.S. EPA relating to this Settlement Agreement shall constitute receipt by Respondents. Documents to be submitted to the Respondents shall be sent to:

Nandra Weeks, P.E.
GeoSyntec Consultants, Inc.
2258 Riverside Avenue
Jacksonville, Florida 32204

Any notice or communication from EPA to Respondents related to a change in the terms of this Settlement Agreement shall be delivered to:

Thomas W. Dimond
Mayer, Brown, Rowe & Maw, LLP
71 South Wacker Drive
Chicago, Illinois 60606

30. U.S. EPA's Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager ("RPM") and On-Scene Coordinator ("OSC") by the NCP. In addition, U.S. EPA's Project Coordinator shall have the authority consistent with the NCP to halt any Work required by this Settlement Agreement, and to take any necessary response action when s/he determines that conditions at the Site may present an immediate endangerment to public health or welfare or the environment. The absence of the U.S. EPA Project Coordinator from the area under study pursuant to this Settlement Agreement shall not be cause for the stoppage or delay of Work.

31. U.S. EPA and Respondents shall have the right, subject to Paragraph 30, to change their respective Project Coordinator. Respondents shall notify U.S. EPA 30 days before such a change is made. The initial notification by either party may be made orally, but shall be promptly followed by a written notice.

32. U.S. EPA shall arrange for a qualified person to assist in its oversight and review of the conduct of the RI/FS, as required by Section 104(a) of CERCLA, 42 U.S.C. Section 9604(a). Such person shall have the authority to observe Work and make inquiries in the absence of U.S. EPA, but not to modify the RI/FS Planning Documents or other work plans. If such person is someone other than U.S. EPA's Project Coordinator, U.S. EPA shall notify Respondents of the name and contact information for such person.

IX. WORK TO BE PERFORMED

33. Respondents shall conduct the all RI/FS activities for OU1, and Respondents, U.S. EPA and its contractors shall cooperate with each other to jointly produce one comprehensive RI/FS for the entire Site in accordance with the provisions of this Settlement Agreement, the SOW, CERCLA, the NCP and applicable U.S. EPA guidance, which may include, the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01), "Guidance for Data Useability in Risk Assessment" (OSWER Directive #9285.7-05), Risk Assessment Guidance for Superfund (RAGS), Volume I - Human Health Evaluation Manual (Part A), Interim Final (EPA-540-1-89-002), OSWER Directive 9285.7-01A, December 1, 1989; and Risk Assessment Guidance for Superfund (RAGS), Volume I - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments), Interim, (EPA 540-R-97-033), OSWER Directive 9285.7-01D, January 1998, guidances referenced in the SOW, and subsequently issued guidance as may be amended or modified by U.S. EPA. In the RI and FS Reports, Respondants shall address the factors required to be taken into account in Section 121 of CERCLA, 42 U.S. C. § 9621, and Section 300.430 of the NCP, 40 C.F.R. §300.430. The RI shall characterize the geology and hydrology of the Site, determine the nature and extent of the contamination at or from the Site, and characterize all ecological zones including terrestrial, riparian, wetlands, aquatic/marine, and transitional. Respondents shall prepare a determination of the nature and extent of the threat to the public health or welfare or the environment caused by the release or threatened release of any hazardous substances, pollutants, or contaminants at or from OU1 at the Site, including a "Baseline Human Health Risk Assessment" and "Baseline Ecological Risk Assessment". The major components of the Baseline Risk Assessments include contaminant identification, exposure assessment, toxicity assessment, and human health and ecological risk characterization. The FS shall determine and evaluate (based on treatability testing, where appropriate) alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy the release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site consistent with the Baseline Human Health Risk Assessment and Baseline Ecological Risk Assessment (including any adverse impacts to human health or the environment that may result from the activities associated with remediation). The alternatives evaluated must include, but shall not be limited to, the range of alternatives described in 40 C.F.R. § 300.430, and shall include remedial actions that utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In evaluating the alternatives, Respondents shall address the Nine

Criteria required to be taken into account by Section 121 of CERCLA, 42 U.S.C. § 9621, and Section 300.430 of the NCP, 40 C.F.R. § 300.430. Upon request by U.S. EPA, Respondents shall submit in electronic form all portions of any report or other deliverable Respondents are required to submit pursuant to provisions of this Settlement Agreement, including the SOW. Upon approval by U.S. EPA, all deliverables under this Settlement Agreement, including the SOW, shall be incorporated into and become enforceable under this Settlement Agreement. Respondents and U.S. EPA and its contractors will jointly produce one comprehensive RI/FS document for the entire Matthiessen and Hegeler Site, including the Human Health Risk Assessment and the Ecological Risk Assessment.

34. Modification of any plans.

a. If at any time during the RI/FS process, Respondents identify a need for additional data, Respondents shall submit a memorandum documenting the need for additional data to the U.S. EPA Project Coordinator within 10 days of identification. U.S. EPA will respond to the memorandum within a reasonable time with a determination, which shall be subject to dispute resolution, as to the need for the additional data. Appropriate work plans, reports or other deliverables will be modified in accordance with U.S. EPA's determination or the result of dispute resolution.

b. In the event of unanticipated or changed circumstances at OU1, Respondents shall notify the U.S. EPA Project Coordinator by telephone within 24 hours of discovery of the unanticipated or changed circumstances. In addition to the authorities in the NCP, in the event that U.S. EPA determines that the immediate threat or the unanticipated or changed circumstances warrant changes in the RI/FS Planning Documents, U.S. EPA shall modify or amend the RI/FS Planning Documents in writing accordingly. Respondents shall perform the RI/FS Planning Documents as modified or amended.

c. U.S. EPA may determine that in addition to tasks defined in the initially approved RI/FS Planning Documents, other additional Work may be necessary to accomplish the objectives of the RI/FS as to OU1 as set forth in the SOW for this RI/FS. If U.S. EPA makes such a determination, it shall provide Respondents with written notice of such determination, and the notice shall specify the additional Work and the reasons therefore. U.S. EPA may require that Respondents perform these response actions in addition to those required by the initially approved RI/FS Planning Documents, including any approved modifications, if it determines that such actions are necessary for a complete RI/FS.

d. Respondents shall confirm their willingness to perform the additional Work in writing to U.S. EPA within 14 days of receipt of the U.S. EPA request. If Respondents object to any modification determined by U.S. EPA to be necessary pursuant to this Paragraph, Respondents may seek dispute resolution pursuant to Section XV (Dispute Resolution). The SOW and/or RI/FS Planning Documents shall be modified, as necessary, in accordance with the final resolution of the dispute.

e. Respondents shall complete the additional Work according to the standards, specifications, and schedule set forth or approved by U.S. EPA in a written modification to the RI/FS Planning Documents or written work plan supplement. U.S. EPA reserves the right to conduct the Work itself at any point, to seek reimbursement from Respondents, and/or to seek any other appropriate relief.

f. Nothing in this Paragraph shall be construed to limit U.S. EPA's authority to require performance of further response actions as otherwise provided in this Settlement Agreement.

35. Meetings. Respondents shall make presentations at, and participate in, meetings related to the performance of the RI/FS at the request of U.S. EPA during the initiation, conduct, and completion of the RI/FS. In addition to discussion of the technical aspects of the RI/FS, topics may include anticipated problems or new issues. Meetings will be scheduled at U.S. EPA's discretion, which shall not be exercised unreasonably.

36. Progress Reports. In addition to the deliverables set forth in this Settlement Agreement, Respondents shall provide to U.S. EPA monthly progress reports by the 10th day of the following month. At a minimum, with respect to the preceding month, these progress reports shall (1) describe the actions which have been taken to comply with this Settlement Agreement during that month, (2) include hard copies and electronic copies (according to U.S. EPA Region 5 specifications) of all results of sampling and tests and all other data received by the Respondents, (3) describe Work planned for the next two months with schedules relating such Work to the overall project schedule for RI/FS completion, and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

37. Emergency Response and Notification of Releases.

a. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from OU1 at the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondents shall immediately take all appropriate action. Respondents shall take these actions in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondents shall also immediately notify the U.S. EPA Project Coordinator or, in the event of his/her unavailability, the On Scene Coordinator ("OSC") or the Regional Duty Officer, U.S. EPA Region 5 Emergency Planning and Response Branch at (Tel: (312) 353-2318) of the incident or Site conditions. In the event that Respondents fail to take appropriate response action as required by this Paragraph, and U.S. EPA takes such action instead, Respondents shall reimburse U.S. EPA all costs of the response action not inconsistent with the NCP pursuant to Section XVIII (Payment of Response Costs).

b. In addition, in the event of any release of a reportable quantity of a hazardous substance from OU1 at the Site, Respondents shall immediately notify the U.S. EPA Project Coordinator, the OSC or Regional Duty Officer at (312) 353-2318 and the National Response Center at (800) 424-8802. Respondents shall submit a written report to U.S. EPA within 7 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

X. U.S. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

38. After review of any plan, report or other item that is required to be submitted for approval pursuant to this Settlement Agreement, U.S. EPA shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that Respondents modify the submission; or (e) any combination of the above. However, U.S. EPA shall not modify a submission without first providing Respondents at least one notice of deficiency and an opportunity to cure within 14 days, except where to

do so would cause serious disruption to the Work or where previous submission(s) have been disapproved due to material defects.

39. In the event of approval, approval upon conditions, or modification by U.S. EPA, pursuant to Subparagraph 38(a), (b), (c), (d), or (e), Respondents shall proceed to take any action required by the plan, report or other item, as approved or modified by U.S. EPA, subject only to their right to invoke the Dispute Resolution procedures set forth in Section XV (Dispute Resolution) with respect to the modifications or conditions made by U.S. EPA. Following U.S. EPA approval or modification of a submittal or portion thereof, Respondents shall not thereafter alter or amend such submittal or portion thereof unless directed by U.S. EPA. In the event that U.S. EPA modifies the submission to cure the deficiencies pursuant to Subparagraph 38(c) and the submission had a material defect, U.S. EPA retains the right to seek stipulated penalties, as provided in Section XVI (Stipulated Penalties). U.S. EPA also retains the right to perform its own studies, complete the RI/FS (or any portion of the RI/FS), and seek reimbursement from Respondents for its costs; and/or seek any other appropriate relief.

40. Resubmission of Plans.

a. Upon receipt of a notice of disapproval, Respondents shall, within 14 days or such longer time as specified by U.S. EPA in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Any stipulated penalties applicable to the submission, as provided in Section XVI, shall accrue during the 14-day period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs 41 and 42.

b. Notwithstanding the receipt of a notice of disapproval, Respondents shall proceed to take any action required by any non-deficient portion of the submission unless otherwise directed by U.S. EPA. Implementation of any non-deficient portion of a submission shall not relieve Respondents of any liability for stipulated penalties under Section XVI (Stipulated Penalties).

c. Respondents shall not proceed further with any subsequent activities or tasks until receiving U.S. EPA approval for the following deliverables: RI/FS Work Plan/Field Sampling Plan, Quality Assurance Project Plan, Draft Remedial Investigation Report, Treatability Testing Work Plan and Sampling and Analysis Plan, and Draft Feasibility Study Report. While awaiting U.S. EPA approval on these deliverables, Respondents shall proceed with all other tasks

and activities which may be conducted independently of these deliverables, in accordance with the schedule set forth in this Settlement Agreement.

d. For all remaining deliverables not enumerated above in subparagraph 40.c., Respondents shall proceed will all subsequent tasks, activities and deliverables without awaiting U.S. EPA approval on the submitted deliverable. U.S. EPA reserves the right to stop Respondents from proceeding further, either temporarily or permanently, on any task, activity, or deliverable at any point during the RI/FS.

41. If U.S. EPA disapproves a resubmitted plan, report or other item, or portion thereof, U.S. EPA may direct Respondents to correct the deficiencies. U.S. EPA also retains the right to modify or develop the plan, report or other item. Respondents shall implement any such plan, report, or item as corrected, modified or developed by U.S. EPA, subject only to their right to invoke the procedures set forth in Section XV (Dispute Resolution).

42. If upon resubmission, a plan, report, or item is disapproved or modified by U.S. EPA due to a material defect, Respondents shall be deemed to have failed to submit such plan, report, or item timely and adequately unless Respondents invoke the dispute resolution procedures in accordance with Section XV (Dispute Resolution) and U.S. EPA's action is revoked or substantially modified pursuant to a Dispute Resolution decision issued by U.S. EPA or superseded by an agreement reached pursuant to that Section. The provisions of Section XV (Dispute Resolution) and Section XVI (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution.

43. In the event that U.S. EPA takes over some of the tasks, but not the preparation of the RI Report or the FS Report, Respondents shall incorporate and integrate information supplied by U.S. EPA into the final reports.

44. All plans, reports, and other items submitted to U.S. EPA under this Settlement Agreement shall, upon approval or modification by U.S. EPA, be incorporated into and enforceable under this Settlement Agreement. In the event U.S. EPA approves or modifies a portion of a plan, report, or other item submitted to U.S. EPA under this Settlement Agreement, the approved or modified portion shall be incorporated into and enforceable under this Settlement Agreement.

45. Neither failure of U.S. EPA to expressly approve or disapprove of Respondents' submissions within a specified time period, nor the absence of

comments, shall be construed as approval by U.S. EPA. Whether or not U.S. EPA gives express approval for Respondents' deliverables, Respondents are responsible for preparing deliverables acceptable to U.S. EPA.

XI. QUALITY ASSURANCE, SAMPLING AND DATA AVAILABILITY

46. Quality Assurance. Respondents shall assure that Work performed, samples taken and analyses conducted conform to the requirements of the SOW, the QAPP and guidances identified therein. Respondents will assure that field personnel used by Respondents are properly trained in the use of field equipment and in chain of custody procedures. Respondents shall only use laboratories which have a documented quality system that complies with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by U.S. EPA.

47. Sampling.

a. All results of sampling, tests, modeling or other data (including raw data) generated by Respondents, or on Respondents' behalf, during the period that this Settlement Agreement is effective, shall be submitted to U.S. EPA (in paper and electronic form according to U.S. EPA Region 5 specifications) in the next monthly progress report as described in Paragraph 36 of this Settlement Agreement. U.S. EPA will make available to Respondents validated data generated by U.S. EPA unless it is exempt from disclosure by any federal or state law or regulation.

b. Respondents shall verbally notify U.S. EPA at least 14 days prior to conducting significant field events as described in the SOW and RI/FS Work Plan/Field Sampling Plan. At U.S. EPA's verbal or written request, or the request of U.S. EPA's oversight assistant, Respondents shall allow split or duplicate samples to be taken by U.S. EPA (and its authorized representatives) of any samples collected by Respondents in implementing this Settlement Agreement. All split samples of Respondents shall be analyzed by the methods identified in the QAPP.

c. Respondents may submit the results and supporting data of samples collected prior to the effective date of this Settlement Agreement for U.S. EPA's review and acceptance in connection with the RI/FS. U.S. EPA shall review such submission and advise Respondents of whether or not U.S. EPA will accept the data for use in connection with the RI/FS. If Respondents object to any determination by U.S. EPA pursuant to this Paragraph, Respondents may seek dispute resolution pursuant to Section XV (Dispute Resolution).

48. Data Availability.

a. At all reasonable times, U.S. EPA and its authorized representatives shall have the authority to enter and freely move about all property owned by Respondents at the Site and off-Site areas where Work, if any, is being performed, for the purposes of inspecting conditions, activities, the results of activities, records, operating logs, and contracts related to the Site or Respondents and its contractor pursuant to this Settlement Agreement; reviewing the progress of Respondents in carrying out the terms of this Settlement Agreement; conducting tests as U.S. EPA or its authorized representatives deem necessary; using a camera, sound recording device or other documentary type equipment; and verifying the data submitted to U.S. EPA by Respondents. Respondents shall allow these persons to inspect and copy all records, files, photographs, documents, sampling and monitoring data, and other writings related to Work undertaken in carrying out this Settlement Agreement. Nothing herein shall be interpreted as limiting or affecting U.S. EPA's right of entry or inspection authority under federal law. All persons accessing the Site under this Paragraph shall comply with all approved Health and Safety Plans.

b. Respondents may assert business confidentiality claims covering part or all of the documents or information submitted to U.S. EPA under this Settlement Agreement to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA. 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by U.S. EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when it is submitted to U.S. EPA [and the State], or if U.S. EPA has notified Respondents that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Respondents. Respondents agree not to assert confidentiality claims with respect to any data related to Site conditions, sampling, or monitoring. Respondents shall segregate and clearly identify all documents or information submitted under this Settlement Agreement for which Respondents assert business confidentiality claims.

49. In entering into this Settlement Agreement, Respondents waive any objections to any data gathered, generated, or evaluated by U.S. EPA, the state or Respondents in the performance or oversight of the Work that has been verified according to the quality assurance/quality control (QA/QC) procedures required by the Settlement Agreement or any U.S. EPA-approved Work Plans or Sampling and Analysis Plans. If Respondents objects to any other data relating

to the RI/FS, Respondents shall submit to U.S. EPA a report that specifically identifies and explains its objections, describes the acceptable uses of the data, if any, and identifies any limitations to the use of the data. The report must be submitted to U.S. EPA within 30 days of the monthly progress report containing the data.

XII. SITE ACCESS

50. If the Site, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by any of Respondents, such Respondents shall, commencing on the Effective Date, provide U.S. EPA and its representatives, including contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Settlement Agreement. U.S. EPA acknowledges that Respondents' on-going manufacturing operations are adjacent to the Site and that this Settlement Agreement does not expand or contract U.S. EPA's rights under federal or state laws or regulations to have access to the Respondents' on-going manufacturing operations for purposes unrelated to the implementation of this Settlement Agreement.

51. Where any Work under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Respondents, Respondents shall use their best efforts to obtain all necessary access agreements within 30 days after the Effective Date, or as otherwise specified in writing by the U.S. EPA Project Coordinator. U.S. EPA acknowledges that it has obtained a consent for access to the portion of the Site owned, or beneficially owned, by Frederick L. Carus and/or Cynthia E. Carus that extends to Respondents to implement the Work. Respondents shall immediately notify U.S. EPA if after using their best efforts they are unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access. Respondents shall describe in writing their efforts to obtain access. U.S. EPA may then assist Respondents in gaining access, to the extent necessary to effectuate the Work described herein, using such means as U.S. EPA deems appropriate. Respondents shall reimburse U.S. EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XVIII (Payment of Response Costs).

52. Notwithstanding any provision of this Settlement Agreement, U.S. EPA retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

53. If Respondents cannot obtain access agreements, U.S. EPA may obtain access for Respondents, perform the Work requiring such access with U.S. EPA contractors, or terminate the Settlement Agreement. In the event that U.S. EPA performs the Work requiring such access with U.S. EPA contractors and does not terminate the Settlement Agreement, Respondents shall perform all other Work not requiring access to that property, and shall reimburse U.S. EPA for all costs incurred in performing the Work requiring such access. Respondents shall integrate the results of any such tasks undertaken by U.S. EPA into its reports and deliverables.

XIII. COMPLIANCE WITH OTHER LAWS

54. Respondents shall comply with all applicable local, state and federal laws and regulations when performing the Work. No local, state, or federal permit shall be required for any portion of any action conducted entirely on-Site, including studies, if the action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621. Where any portion of the Work is to be conducted off-Site and requires a federal or state permit or approval, Respondents shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals. This Settlement Agreement is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

XIV. RETENTION OF RECORDS

55. During the pendency of this Settlement Agreement and for a minimum of 10 years after commencement of construction of any remedial action, each Respondent shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. This retention requirement shall not apply to internal respondent drafts of documents to be submitted to U.S. EPA; provided however, that all field notes, data, test results or similar documents are subject to all document retention requirements. Until 10 years after commencement of construction of any remedial action, Respondents shall also instruct their contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

56. At the conclusion of this document retention period, Respondents shall notify U.S. EPA at least 90 days prior to the destruction of any such records or documents, and, upon request by U.S. EPA, Respondents shall deliver any such records or documents to U.S. EPA. Respondents may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondents assert such a privilege, they shall provide U.S. EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or information; and 6) the privilege asserted by Respondents. However, no final documents or reports and no sampling data or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

57. Each Respondent hereby certifies individually that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by U.S. EPA or the filing of suit against it regarding the Site.

XV. DISPUTE RESOLUTION

58. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally.

59. If Respondents object to any U.S. EPA action taken pursuant to this Settlement Agreement, including billings for Future Response Costs, they shall notify U.S. EPA in writing of their objection(s) within 10 days of such action, except to the extent that this Settlement Agreement allows a longer period of time for the submission of such objection or unless the objection(s) has/have been resolved informally. U.S. EPA and Respondents shall have 14 days from U.S. EPA's receipt of Respondents' written objection(s) to resolve the dispute (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of U.S. EPA. Such extension may be granted verbally but must be confirmed in writing to be effective.

60. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by the Parties, be incorporated into and become an enforceable part of this Settlement Agreement. If the Parties are unable to reach an agreement within the `Negotiation Period, within 10 days thereafter, Respondent and U.S. EPA's Project Manager may submit written memoranda describing the dispute and their respective proposed resolutions to a U.S. EPA management official at the Superfund Branch Chief level or higher who will issue a written decision regarding the dispute. U.S. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Respondents' obligations under this Settlement Agreement for Work not related to the dispute shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondents shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with U.S. EPA's decision, whichever occurs. Respondents shall proceed in accordance with U.S. EPA's final decision regarding the matter in dispute, regardless of whether Respondents agree with the decision. If Respondents do not agree to perform or do not actually perform the Work in accordance with U.S. EPA's final decision, U.S. EPA reserves the right in its sole discretion to conduct the Work itself, to seek reimbursement from Respondents, to seek enforcement of the decision, to seek stipulated penalties, and/or to seek any other appropriate relief.

XVI. STIPULATED PENALTIES

61. Respondents shall be liable to U.S. EPA for stipulated penalties in the amounts set forth in Paragraphs 62 and 63 for failure to comply with any of the requirements of this Settlement Agreement specified below unless excused under Section XVII (Force Majeure). "Compliance" by Respondents shall include completion of the Work under this Settlement Agreement or any activities contemplated to be undertaken by Respondents related to OU1 under any of the RI/FS Planning Documents, work plans or other plan approved under this Settlement Agreement in accordance with all applicable requirements of law, this Settlement Agreement, the SOW, and any plans or other documents approved by U.S. EPA pursuant to this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.

62. Stipulated Penalty Amounts.

The following stipulated penalties shall accrue per day for any noncompliance with this Settlement Agreement:

Penalty Per Violation Per Day	Period of Noncompliance
$ 500	1st through 14th day
$ 1500	15th through 30th day
$ 3500	31st day and beyond

63. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (1) with respect to a violation or untimely performance regarding a submission under Section X (U.S. EPA Approval of Plans and Other Submissions), during the period, if any, beginning on the 31st day after U.S. EPA's receipt of such submission until the date that U.S. EPA notifies Respondents of any deficiency; and (2) with respect to a matter for which dispute resolution is invoked under Paragraph 60, during the period, if any, beginning on the 24th day after the Negotiation Period begins until the date that the U.S. EPA management official issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement.

64. Following U.S. EPA's determination that Respondents have failed to comply with a requirement of this Settlement Agreement, U.S. EPA may give Respondents written notification of the same and describe the noncompliance. U.S. EPA may send Respondents a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether U.S. EPA has notified Respondents of a violation.

65. a. All penalties accruing under this Section shall be due and payable to U.S. EPA within 45 days of Respondents' receipt from U.S. EPA of a demand for payment of the penalties, unless Respondents invoke the dispute resolution procedures in accordance with Section XV (Dispute Resolution). All payments to U.S. EPA under this Section shall be paid by certified or cashier's check(s) made payable to "EPA Hazardous Substances Superfund," shall indicate that the payment is for stipulated penalties, shall reference U.S. EPA Region 5 and Site ID Number B568, the U.S. EPA Docket Number, and the name and address of the parties making payment, and shall be sent to:

Environmental Protection Agency, Region 5
P.O. Box 371531
Pittsburgh PA 15251-7531

Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s) shall be sent to:

Larry L. Johnson	Demaree Collier
Site Attorney	Regional Project Manager
Office of Regional Counsel	Superfund Division
77 West Jackson, C-14J	77 West Jackson, SR-6J
Chicago, IL 60604	Chicago, IL 60604

b. The total amount to be paid by Respondents pursuant to this Section shall be deposited in the Matthiessen and Hegeler Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

66. The payment of penalties shall not alter in any way Respondents' obligation to complete performance of the Work required under this Settlement Agreement.

67. Penalties shall continue to accrue as provided in Paragraph 63 during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of U.S. EPA's decision.

68. If Respondents fail to pay stipulated penalties when due, U.S. EPA may institute proceedings to collect the penalties, as well as Interest. Respondents shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 64.

69. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of U.S. EPA to seek any other remedies or sanctions available by virtue of Respondents' violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that U.S. EPA shall not seek civil penalties pursuant to Section 122(l) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of willful violation of this Settlement

Agreement or in the event that U.S. EPA assumes performance of a portion or all of the Work pursuant to Section XX (Reservation of Rights by U.S. EPA). Notwithstanding any other provision of this Section, U.S. EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

XVII. FORCE MAJEURE

70. Respondents agree to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a *force majeure.* For purposes of this Settlement Agreement, *force majeure* is defined as any event arising from causes beyond the control of Respondents or of any entity controlled by Respondents, including but not limited to their contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Respondents' best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work or increased cost of performance.

71. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a *force majeure* event, Respondents shall notify U.S. EPA orally within 7 days of when Respondents first knew that the event might cause a delay. Within 7 days thereafter, Respondents shall provide to U.S. EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondents' rationale for attributing such delay to a *force majeure* event if they intend to assert such a claim; and a statement as to whether, in the opinion of Respondents, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondents from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

72. If U.S. EPA agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* event will be extended by U.S. EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of

any other obligation. If U.S. EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, U.S. EPA will notify Respondents in writing of its decision. If U.S. EPA agrees that the delay is attributable to a *force majeure* event, U.S. EPA will notify Respondents in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

XVIII. PAYMENT OF RESPONSE COSTS

73. Payments for Past Response Costs

a. Within 30 days after the Effective Date, Respondents shall pay to U.S. EPA $83,716.31 for Past Response Costs. Payment shall be made to U.S. EPA by Electronic Funds Transfer (EFT) in accordance with current EFT procedures that U.S. EPA Region 5 will provide Respondents, and shall be accompanied by a statement identifying the name and address of the parties making payment, the Site name, the U.S. EPA Region and Site/Spill ID B568 and the U.S. EPA docket number for this action, if applicable. Region 5 EFT procedures are: Respondent shall: 1) complete Respondents' required bank form; 2) include J P Morgan Chase Bank NA, ABA #021000021 on the bank form; 3) include U.S. EPA Account #1113399 on the form, and 4) include a statement identifying the name and address of the parties making payment, the Site name and U.S. EPA Region and Site/Spill ID #B568.

b. At the time of payment, Respondents shall send notice that payment has been made to:

Larry L. Johnson
Site Attorney
Office of Regional Counsel
Mail Code C-14J
77 West Jackson
Chicago, IL 60604-3590

Demaree Collier
Remedial Project Manager
Superfund Division
Mail Code SR-6J
77 West Jackson
Chicago, IL 60604-3590

c. The total amount to be paid by Respondents pursuant to Subparagraph 70.a shall be deposited in the Matthiessen and Hegeler Zinc Company Site Special Account within the U.S. EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by U.S. EPA to the U.S. EPA Hazardous Substance Superfund.

74. Payments for Future Response Costs.

a. Respondents shall pay U.S. EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, U.S. EPA will send Respondents a bill requiring payment that includes an Itemized Cost Summary for Future Response Costs incurred. Respondents may request supporting documentation sufficient to determine the relationship of Future Response Costs to the Work at OU1 or to the Site as a whole. Respondents shall make all payments within 30 days of receipt of each bill requiring payment, except as otherwise provided in Paragraph 76 of this Settlement Agreement, according to the following procedures:

(i) If the payment amount demanded in the bill is for $10,000 or greater, payment shall be made to U.S. EPA by Electronic Funds Transfer (EFT) in accordance with current EFT procedures that U.S. EPA Region 5 will provide Respondents, and shall by accompanied by a statement identifying the name and address of the parties making payment, the Site name, the U.S. EPA Region and Site/Spill ID B568 and the U.S. EPA docket number for this action, if applicable. Region 5 EFT procedures are: Respondent shall: 1) complete Respondents' required bank form; 2) include J P Morgan Chase Bank NA, ABA #021000021 on the bank form; 3) include U.S. EPA Account #1113399 on the form, and 4) include a statement identifying the name and address of the parties making payment, the Site name and U.S. EPA Region and Site/Spill ID #B568.

(ii) If the amount demanded in the bill is $10,000 or less, the Settling Respondents may in lieu of the EFT procedures in subparagraph 74 (a)(i) make all payments required by this Paragraph by a certified or cashier's check or checks made payable to EPA Hazardous Substance Superfund" referencing the name and address of the party making the payment, and the EPA Site/Spill ID #B568. Settling Respondents shall send the check(s) to:

Environmental Protection Agency, Region 5
P.O. Box 371531
Pittsburgh, PA 15251-7531

b. At the time of payment, Respondents shall send notice that payment has been made to:

Larry L. Johnson
Site Attorney
Office of Regional Counsel
Mail Code C-14J
77 West Jackson
Chicago, IL 60604-3590

Demaree Collier
Remedial Project Manager
Superfund Division
Mail Code SR-6J
77 West Jackson
Chicago, IL 60604-3590

c. The total amount to be paid by Respondents pursuant to Subparagraph 70.a shall be deposited in the Matthiessen and Hegeler Zinc Company Site Special Account within the U.S. EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by U.S. EPA to the U.S. EPA Hazardous Substance Superfund.

75. If Respondents do not pay the Past Response Costs Amount within 30 days of the Effective Date, or Future Response Costs within 30 days of Respondents' receipt of a bill, Respondents shall pay Interest on the unpaid balance of the Past Response Costs Amount or Future Response Costs respectively. The Interest on any unpaid Past Response Costs Amount shall begin to accrue on the Effective Date and shall continue to accrue until the date of payment. The Interest on unpaid Future Response Costs shall begin to accrue on the date payment of the bill was due and shall continue to accrue until the date of payment. If U.S. EPA receives a partial payment, Interest shall accrue on any unpaid balance. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondents' failure to make timely payments under this Section, including but not limited to, payments of stipulated penalties pursuant to Section XVI. Respondents shall make all payments required by this Paragraph in the manner described in Paragraph 74.

76. Respondents may contest payment of any Future Response Costs under Paragraph 74 if they determine that U.S. EPA has made an accounting error or if they believe U.S. EPA incurred excess costs as a direct result of an U.S. EPA action that was inconsistent with the NCP. Such objection shall be made in writing within 45 days of receipt of the bill and must be sent to the U.S. EPA Project Coordinator. Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, Respondents shall within the 30 day period pay all uncontested Future Response Costs to U.S. EPA in the manner described in Paragraph 74. Respondents shall initiate the Dispute Resolution procedures in Section XV (Dispute Resolution). If U.S. EPA prevails in the dispute, within 5 days of the

resolution of the dispute, Respondents shall pay the sums due (with accrued interest) to U.S. EPA in the manner described in Paragraph 74. If Respondents prevail concerning any aspect of the contested costs, Respondents shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to U.S. EPA in the manner described in Paragraph 74. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XV (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Respondents' obligation to reimburse U.S. EPA for its Future Response Costs.

XIX. COVENANT NOT TO SUE BY U.S. EPA

77. In consideration of the actions that will be performed and the payments that will be made by Respondents under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, U.S. EPA covenants not to sue or to take administrative action against Respondents pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for performance of the Work and for recovery of Past Response Costs and Future Response Costs. This covenant not to sue shall take effect upon receipt by U.S. EPA of the Past Response Costs Amount due under Section XVIII of this Settlement Agreement and any Interest or Stipulated Penalties due for failure to pay the Past Response Costs Amount as required by Sections XVIII and XVI of this Settlement Agreement. This covenant not to sue is conditioned upon the complete and satisfactory performance by Respondents of their obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Section XVIII. This covenant not to sue extends only to Respondents and does not extend to any other person.

XX. RESERVATIONS OF RIGHTS BY U.S. EPA

78. Except as specifically provided in this Settlement Agreement, nothing herein shall limit the power and authority of U.S. EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, except as specifically provided in this Settlement Agreement, nothing herein shall prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondents in the future to perform additional activities pursuant to CERCLA or any other applicable law.

79. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. U.S. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Respondents with respect to all other matters, including, but not limited to:

a. claims based on a failure by Respondents to meet a requirement of this Settlement Agreement;

b. liability for costs not included within the definitions of Past Response Costs or Future Response Costs;

c. liability for performance of response action other than the Work;

d. criminal liability;

e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site;

g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site; and

h. liability for costs incurred if U.S. EPA assumes the performance of the Work pursuant to Paragraph 80.

80. Work Takeover. In the event U.S. EPA determines that Respondents have ceased implementation of any portion of the Work, are deficient or late in their performance of the Work, or are implementing the Work in a manner which may cause an endangerment to human health or the environment, U.S. EPA shall notify the Respondents of such determination in writing and thereafter may assume the performance of all or any portion of the Work as U.S. EPA determines necessary. Respondents may invoke the procedures set forth in Section XV (Dispute Resolution) to dispute U.S. EPA's determination that takeover of the Work is warranted under this Paragraph. Notwithstanding any other provision of this Settlement Agreement, U.S. EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XXI. COVENANT NOT TO SUE BY RESPONDENTS

81. Except to the extent that the United States may be liable with respect to the Site under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), Respondents covenant not to sue and agree not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Past Response Costs, Future Response Costs, or this Settlement Agreement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim arising out of the Work or arising out of the response actions for which the Past Response Costs or Future Response Costs have or will be incurred, including any claim under the United States Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law ; or

c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Work or payment of Past Response Costs or Future Response Costs.

82. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XXII. OTHER CLAIMS

83. By issuance of this Settlement Agreement, the United States and U.S. EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents.

84. Except as expressly provided in Section XIX (Covenant Not to Sue by U.S. EPA), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Respondents or any person not a party to this Settlement Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

85. No action or decision by U.S. EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review.

XXIII. CONTRIBUTION

86. a. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2), and that Respondents are entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement are the Work, Past Response Costs and Future Response Costs.

b. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which Respondents have, as of the Effective Date, resolved their liability to the United States for the Work, Past Response Costs and Future Response Costs.

c. Nothing in this Settlement Agreement precludes the United States or Respondents from asserting any claims, causes of action, or demands against any persons not parties to this Settlement Agreement for indemnification, contribution, or cost recovery. Nothing herein diminishes the right of the United States, pursuant to Sections 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613 (f)(2) and (3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2).

XXIV. INDEMNIFICATION

87. Respondents shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account, of negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Settlement Agreement. In addition, Respondents agree to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors and any persons

acting on their behalf or under their control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondents in carrying out activities pursuant to this Settlement Agreement. Neither Respondents nor any such contractor shall be considered an agent of the United States.

88. The United States shall give Respondents notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondents prior to settling such claim.

89. Respondents waive all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents and any person for performance of Work on or relating to the Site. In addition, Respondents shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Respondents and any person for performance of Work on or relating to the Site.

XXV. INSURANCE

90. At least 10 days prior to commencing any On-Site Work under this Settlement Agreement, Respondents shall secure, and shall maintain for the duration of this Settlement Agreement, comprehensive general liability insurance and automobile insurance with limits of $2 million dollars, combined single limit, naming the United States as an additional insured. Within the same period, Respondents shall provide U.S. EPA with certificates of such insurance and a copy of each insurance policy. Respondents shall submit such certificates and copies of policies each year on the anniversary of the Effective Date. In addition, for the duration of the Settlement Agreement, Respondents shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondents in furtherance of this Settlement Agreement. If Respondents demonstrate by evidence satisfactory to U.S. EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondents need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

XXVI. FINANCIAL ASSURANCE

91. Within 30 days of the Effective Date, Respondents shall establish and maintain financial security for the benefit of U.S. EPA in the amount of $325,000 in one or more of the following forms, in order to secure the full and final completion of Work by Respondents:

a. a surety bond unconditionally guaranteeing payment and/or performance of the Work;

b. one or more irrevocable letters of credit, payable to or at the direction of U.S. EPA, issued by financial institution(s) acceptable in all respects to U.S. EPA equaling the total estimated cost of the Work;

c. a trust fund administered by a trustee acceptable in all respects to U.S. EPA;

d. a policy of insurance issued by an insurance carrier acceptable in all respects to U.S. EPA, which ensures the payment and/or performance of the Work;

e. a corporate guarantee to perform the Work provided by one or more parent corporations or subsidiaries of Respondents, or by one or more unrelated corporations that have a substantial business relationship with at least one of Respondents; including a demonstration that any such company satisfies the financial test requirements of 40 C.F.R. Part 264.143(f);

f. a corporate guarantee to perform the Work by one or more of Respondents, including a demonstration that any such Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f); and/or

g. any other financial mechanism acceptable to and approved by U.S. EPA.

92. In the event that U.S. EPA determines at any time that the financial assurances provided pursuant to this Section (including, without limitation, the instrument(s) evidencing such assurances) do not meet the requirements of Paragraph 91, Respondents shall, within thirty (30) days of receipt of notice of U.S. EPA's determination, either invoke dispute resolution or obtain and present to U.S. EPA for approval one of the other forms of financial assurance listed in Paragraph 91 above. In addition, if at any time U.S. EPA notifies Respondents that the anticipated cost of completing the Work has increased, then, within thirty

(30) days of such notification, Respondents shall obtain and present to U.S. EPA for approval a revised form of financial assurance (otherwise acceptable under this Section) that reflects such cost increase. Respondents' inability to demonstrate financial ability to complete the Work shall in no way excuse performance of any activities required under this Settlement Agreement.

93. If Respondents seek to ensure completion of the Work through a guarantee pursuant to Subparagraph 91.e. or 91.f. of this Settlement Agreement, Respondents shall (i) demonstrate to U.S. EPA's satisfaction that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f); and (ii) resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the Effective Date, to U.S. EPA. For the purposes of this Settlement Agreement, wherever 40 C.F.R. Part 264.143(f) references "sum of current closure and post-closure costs estimates and the current plugging and abandonment costs estimates," the current cost estimate of $325,000 for the Work at the Site shall be used in relevant financial test calculations.

94. If, after the Effective Date, Respondents can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 91 of this Section, Respondents may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondents shall submit a proposal for such reduction to U.S. EPA, in accordance with the requirements of this Section, and may reduce the amount of the security after receiving written approval from U.S. EPA. In the event of a dispute, Respondents may seek dispute resolution pursuant to Section XV (Dispute Resolution) and may reduce the amount of security in accordance with U.S. EPA's written decision resolving the dispute.

95. Respondents may change the form of financial assurance provided under this Section at any time, upon notice to and prior written approval by U.S. EPA, provided that U.S. EPA determines that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondents may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

XXVII. SEVERABILITY/INTEGRATION/APPENDICES

96. If a court issues an order that invalidates any provision of this Settlement Agreement or finds that Respondents have sufficient cause not to

comply with one or more provisions of this Settlement Agreement, Respondents shall remain bound to comply with all provisions of this Settlement Agreement not invalidated or determined to be subject to a sufficient cause defense by the court's order.

97. This Settlement Agreement and any deliverables, technical memoranda, specifications, schedules, documents, plans, reports (other than progress reports), etc that will be developed pursuant to this Settlement Agreement and become incorporated into and enforceable under this Settlement Agreement constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following appendices are attached to and incorporated into this Settlement Agreement:

"Appendix A" is the SOW;

"Appendix B" is the map of the Site;

XXVIII. ADMINISTRATIVE RECORD

98. U.S. EPA will determine the contents of the administrative record file for selection of the remedial action. Respondents shall submit to U.S. EPA documents related to the Site developed during the course of the RI/FS upon which selection of the response action may be based. Upon request of U.S. EPA, Respondents shall provide copies of plans, task memoranda for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports related to the Site. Upon request of U.S. EPA, Respondents shall additionally submit any previous studies conducted under state, local or other federal authorities relating to selection of the response action for the Site, and all communications between Respondents and state, local or other federal authorities concerning selection of the response action for the Site At U.S. EPA's discretion, Respondents shall cooperate with the establishment of a community information repository at or near the Site, to house one copy of the administrative record.

XXIX. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

99. This Settlement Agreement shall be effective 10 days after the Settlement Agreement is signed by the Director of the Superfund Division or

his/her delegate, so long as the fully executed Settlement Agreement is mailed or otherwise delivered to the Respondents within 10 days following the signing by all parties.

100. This Settlement Agreement may be amended by mutual agreement of U.S. EPA and Respondents. Amendments shall be in writing and shall be effective when signed by U.S. EPA, so long as the fully executed Settlement Agreement is mailed or otherwise delivered to the Respondents within 10 days following the signing by all parties. U.S. EPA Project Coordinators do not have the authority to sign amendments to the Settlement Agreement.

101. No informal advice, guidance, suggestion, or comment by the U.S. EPA Project Coordinator or other U.S. EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondents shall relieve Respondents of their obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

XXX. NOTICE OF COMPLETION OF WORK

102. When U.S. EPA determines that all Work has been fully performed in accordance with this Settlement Agreement, U.S. EPA will provide written notice to Respondents. If U.S. EPA determines that any such Work has not been completed in accordance with this Settlement Agreement, U.S. EPA will notify Respondents, provide a list of the deficiencies, and require that Respondents modify the RI/FS Work Plan/Field Sampling Plan or other work plan if appropriate in order to correct such deficiencies. Respondents shall implement the modified and approved RI/FS Work Plan/Field Sampling Plan or other approved work plan and shall submit a modified Final Report in accordance with the U.S. EPA notice or invoke dispute resolution. Failure by Respondents to implement the approved modified RI/FS Work Plan/Field Sampling Plan or other work plan shall be a violation of this Settlement Agreement.

The Undersigned Party enters into this Administrative Settlement Agreement and Order on Consent in the matter of the Matthiessen and Hegeler Zinc Company CERCLA Site.

Agreed this 18 day of SEPTEMBER, 2006.

For Respondents Carus Corporation and Carus Chemical Company

Signature: _____

Name: PAUL CARUS

Title: COO

Address: 1500 8TH STREET, LASALLE IL 61301

Phone: 815.223.1500

It is so ORDERED AND AGREED this 26th day of September, 2006.

BY: _____

for Richard C. Karl, Director
Superfund Division
U.S. Environmental Protection Agency
Region 5

It is so ORDERED AND AGREED this 26th day of SEPTEMBER, 2006.

BY: _____

Richard C. Karl, Director
Superfund Division
U.S. Environmental Protection Agency
Region 5

APPENDIX A

STATEMENT OF WORK

APPENDIX A

STATEMENT OF WORK
FOR A REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
AT THE MATTHIESSEN AND HEGELER ZINC COMPANY SITE
LASALLE, ILLINOIS

I. PURPOSE:

This Statement of Work (SOW) sets forth the requirements for conducting a Remedial Investigation and Feasibility Study (RI/FS) at the Matthiessen and Hegeler Zinc Company Site in LaSalle, Illinois ("Site"). The Site includes the160 acre property located along the east side of LaSalle, Illinois (its legal description includes it as being a part of the Southeast Quarter of Section Ten; the Southwest Quarter of Section Eleven; the Northwest Quarter of Section Fourteen and the Northeast Quarter of Section Fifteen, all in Township Thirty-three North, Range One East, of the Third Principal Meridian in LaSalle County, Illinois) and any off-property areas where hazardous substances, pollutants or contaminants from the property or from former operations at the property have or may have come to be located from the property. As applicable to Respondents, Carus Corporation and Carus Chemical Company, under the Administrative Settlement Agreement and Order on Consent for Remedial Investigation/Feasibility Study (the "Settlement Agreement"), this SOW establishes the requirements for Respondents to conduct an RI/FS for OU1 (defined in the Settlement Agreement) and to cooperate with U.S. EPA and its contractor, who is responsible for conducting an RI/FS for OU2 (also defined in the Settlement Agreement). The Respondent is responsible for physically combining all of the sections of the RI/FS Report into one cohesive document. The RI Report shall fully evaluate the nature and extent of hazardous substances, pollutants or contaminants at or from the Site. The Risk Assessment Report shall assess the risk which these hazardous substances, pollutants or contaminants present for human health and the environment. The RI Report will provide sufficient data to develop and evaluate effective remedial alternatives. This information is then presented in the FS Report, which will evaluate alternatives for addressing the impact to human health and the environment from hazardous substances, pollutants or contaminants at the Site.

The RI/FS shall comply with all requirements and applicable guidance for RI/FS studies and reports, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300) as amended. The RI and FS Reports shall be prepared consistent with the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA/540/G-89/004, October 1988) (RI/FS Guidance), and any other guidance that the United States Environmental Protection Agency (U.S. EPA) uses in conducting or submitting deliverables for a RI/FS, as well as any additional requirements in the Settlement Agreement. The RI/FS Guidance describes the report format and the required report content. Numerical references to the appropriate sections of the RI/FS Guidance follow the section headings throughout this SOW. Exhibit A sets forth a partial list of guidance used by U.S. EPA for a RI/FS.

The Respondent shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RI/FS for OU1, except as otherwise specified herein. As specified in

CERCLA Section 104(a)(1), as amended by SARA, U.S. EPA will provide oversight of the Respondent's activities throughout the RI/FS, including all field sampling activities. The Respondent shall support U.S. EPA's initiation and conduct of activities related to the implementation of oversight activities.

At the completion of the RI/FS, U.S. EPA will be responsible for the selection of a Site remedy and will document this selection in a Record of Decision (ROD). The remedial action selected by U.S. EPA will meet the cleanup standards specified in CERCLA Section 121. That is, the selected remedial action will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws, will be cost-effective, will use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, and will address the statutory preference for treatment as a principal element. The final RI and FS Reports as approved by U.S. EPA will, with the administrative record, form the basis for the selection of the Site's remedy and will provide the information necessary to support the development of the ROD.

II. DOCUMENT REVIEW

The Respondent shall submit all documents or deliverables as indicated in this SOW (and shall cooperate with U.S. EPA and its contractor to submit any jointly deliverable documents) to the U.S. EPA, with a copy to the Illinois Environmental Protection Agency (Illinois EPA) for review and approval by U.S. EPA. After review of any plan, report or other item which is required to be submitted for approval pursuant to the Settlement Agreement, U.S. EPA, after reasonable opportunity for review and comment by the Illinois EPA, may:

1) Approve, in whole or in part, the submission;
2) Require revisions to the submission;
3) Modify the submission;
4) Disapprove, in whole or in part, the submission; or
5) Any combination of the above to conform to the requirements of the Settlement Agreement, SOW, NCP or applicable U.S. EPA guidance.

If U.S. EPA requires revisions, the Respondent (or the Respondent in cooperation with U.S. EPA's contractor, as applicable) shall submit a revised submission incorporating all of U.S. EPA's required revisions within 21 calendar days of receipt of U.S. EPA's notification of the required revisions.

Groundwater Elevation and Optimization System (GEOS) is a new data management system being used by the Superfund Division of U.S. EPA Region 5 that will allow the Respondent to submit Superfund data electronically. All data collected after the Effective Data of the Settlement Agreement shall be submitted on a 3.5" diskette, a ZIP™ or ZIP™ compatible disk, or a CD. As specified elsewhere in this SOW, regularly required hard copies of all reports and data summaries will also be sent to the attention of the U.S. EPA Remedial Project Manager (RPM) and Illinois EPA Project Manager. However, in addition, the electronic data must also be

submitted on the 3.5" diskette, a ZIP™ or ZIP™ compatible disk, or a CD to the following address, with a cover letter:

David Wilson
GEOS Data Coordinator
United States EPA (SRF-5J)
77 West Jackson Blvd.
Chicago, IL 60604

The cover letter should include:

- Site name, data collection dates, and contact person;
- Explanations about any errors detected and about any revisions to data submitted previously; and
- Any proposed additions to the list of valid values.

The U.S. EPA RPM and the Illinois EPA Project Managers should also receive a copy of the cover letter.

All of the electronic data requirements are specified at:
http://www.epa.gov/region5/superfund/edman

The Respondent can download the Superfund Electronic Data Deliverable Specification Manual from that website.

III. SCOPE

The Respondent shall complete the following tasks as part of this RI/FS as they relate to OU1. U.S. EPA's contractor shall complete these tasks as they relate to OU2. The Respondent and U.S. EPA's contractor will cooperate with each other to produce a single RI/FS for the Site, including the Risk Assessment.

Task 1: Project Scoping and RI/FS Planning Documents
Task 2: Community Relations and Technical Assistance Plan
Task 3: Site Characterization
Task 4: Remedial Investigation Report
Task 5: Treatability Studies
Task 6: Development and Screening of Alternatives (Technical Memorandum)
Task 7: Detailed Analysis of Alternatives (FS Report)
Task 8: Progress Reports

IV. TASKS

TASK 1: PROJECT SCOPING AND RI/FS PLANNING DOCUMENTS

OU1 Background

The Respondent shall gather and analyze the existing OU1 background information and shall conduct an OU1 visit and participate in a contemporaneous visit to OU2 to assist in planning the scope of the RI/F

Task 1.1. Collect and Analyze Existing Data and Submit Technical Letter Report

Before planning the RI/FS activities, the Respondent shall thoroughly compile and review all existing OU1 data. Specifically, this includes data relating to the varieties and quantities of hazardous substances, pollutants and contaminants at OU1, past disposal practices, and the results of previous sampling activities. An analysis shall be provided concerning groundwater, surface water, air, and sediment data available from all previous studies conducted at OU1, and what the data may indicate regarding contamination found at OU1. Historical data shall be submitted electronically according to U.S. EPA specification. Examples of existing information about OU1 may include previous Site Investigation Reports, Preliminary Assessment Reports, and Site Inspection Reports. This data compilation and analysis described herein shall be submitted to U.S. EPA and Illinois EPA in the form of a Technical Letter Report.

This Technical Letter Report shall be submitted to U.S. EPA and Illinois EPA within sixty (60) days of the effective date of the Settlement Agreement. This letter report will provide the aforementioned synopsis of available data and identify potential data gaps to be addressed by the forthcoming RI/FS work plan, as described above. This Technical Letter Report serves to assist the Respondent, U.S. EPA, and Illinois EPA in the specifications and planning for the RI/FS work.

Task 1.2 Conduct OU1 Visit and Scoping Meeting

The Respondent shall lead a tour of OU1 for U.S. EPA and Illinois EPA and participate in a contemporaneous tour of OU2. The technical scoping meeting will be synchronized with the tour of OU1 and OU2. The tour and scoping meeting will be used to develop a better understanding of the Site, and focus on the sources and the areas of contamination, as well as potential exposure pathways and receptors at the Site. During the tour, the Respondent shall observe, to the extent possible, OU1's physiography, hydrology, geology, and demographics, as well as natural resource, ecological and cultural features. The Respondent shall coordinate this visit with the U.S. EPA Remedial Project Manager.

Task 1.3. RI/FS Planning Documents (Work Plan/Field Sampling Plan/QAPP)

General Requirements

Within 60 calendar days after the effective date of the Settlement Agreement, Respondent shall submit the RI/FS Planning Documents (including Work Plan/Field Sampling Plan, Quality Assurance Project Plan, and Health and Safety Plan) related to OU1 to U.S. EPA for review and/or approval pursuant to Section II, Document Review. To the extent an RI/FS Planning Document encompasses matters related to both OUs, Respondent and U.S. EPA's contractor will cooperate with each other to produce and submit a single document. U.S. EPA and its contractors will be working closely with the Respondents during this period to assist in the development of an overall Planning Document for the Site as a whole. This may include several conference calls and/or meetings to discuss the set up for the remedial investigations.

The objective of the RI/FS Planning Documents is to develop an RI/FS strategy and general management plan that accomplishes the following:

- A remedial investigation that fully determines the nature and extent of the release or threatened release of hazardous substances, pollutants, or contaminants at and from the Site. In performing this investigation, the Respondent shall gather sufficient data, samples, and other information to fully characterize the nature and extent of the contamination at OU1, to support the human health and ecological risk assessments and to provide sufficient data for the identification and evaluation of remedial alternatives for OU1.

- A feasibility study that identifies and evaluates alternatives for the appropriate extent of remedial action to prevent or mitigate the migration or the release or threatened release of hazardous substances, pollutants, or contaminants at and from the Site.

- When scoping the specific aspects of the project, the Respondent shall meet with U.S. EPA to discuss all project planning decisions and special concerns associated with the Site.

- The RI/FS Planning Documents shall include a detailed description of the tasks the Respondent and U.S. EPA's contractor shall perform, the information needed for each task, a detailed description of the information the Respondent and U.S. EPA's contractor shall produce during and at the conclusion of each task, and a description of the work products that the Respondent and/or U.S. EPA's contractor shall submit to U.S. EPA and Illinois EPA. This includes the deliverables set forth in this SOW; a schedule for each of the required activities consistent with the RI/FS Guidance and other relevant guidance; and a project management plan including a data management plan (e.g., requirements for project management systems and software, minimum data requirements, requirements for submittal of electronic data, data format and backup data management), monthly reports to U.S. EPA and Illinois EPA, and meetings and presentations to U.S. EPA and Illinois EPA at the conclusion of each major phase

of the RI/FS. The Respondent shall refer to Appendix B of the RI/FS Guidance for a description of the required contents of the RI/FS Planning Documents.

- The RI/FS Planning Documents shall include the preliminary objectives for the remedial action at the Site; preliminary potential state and federal ARARs (chemical-specific, location-specific and action-specific); a description of the Site management strategy developed by the Respondent and U.S. EPA's contractor and U.S. EPA during scoping; a preliminary identification of remedial alternatives; and data needs for fully characterizing the nature and extent of the contamination at the Site, evaluating risks and developing and evaluating remedial alternatives. The RI/FS Planning Documents shall reflect coordination with treatability study requirements, if any. The RI/FS Planning Documents shall also include a process for and manner of refining and/or identifying additional Federal and State ARARs, and for preparing the human health and ecological risk assessments and the feasibility study.

Specific Requirements

The Respondent shall develop the RI/FS Planning Documents for OU1 as described in "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," October, 1988 and shall include:

Site Background

The OU1 Background section shall include a brief summary of the OU1 location, description, physiography, hydrology, geology, demographics, ecological, cultural and natural resource features, OU1 history, description of previous investigations and responses conducted at OU1 by local, state, federal, or private parties, and OU1 data evaluations and project planning completed during the scoping process.

The OU1 background section shall discuss areas of waste handling and disposal activities, the locations of existing groundwater monitoring wells, if any, and previous surface water, sediment, soil, groundwater, and air sampling locations. The OU1 Background section shall include a summary description of available data and identify areas where hazardous substances, pollutants or contaminants were detected and the detected levels. This includes the data in Previous Site Investigation Reports, Preliminary Assessment Reports, and Site Inspection Reports. The OU1 Background section shall include tables displaying the minimum and maximum levels of detected hazardous substances, pollutants or contaminants in OU1 areas and media.

Work Plan/Field Sampling Plan

The Work Plan/Field Sampling Plan (FSP) portion of the RI/FS Planning Documents shall be prepared to ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that the data meet the Site-specific Data Quality Objectives as established in the Quality Assurance

Project Plan (QAPP) and FSP. All sampling and analyses performed shall conform to U.S. EPA direction, approval, and guidance regarding sampling, quality assurance/quality control (QA/QC), data validation, and chain of custody procedures. The Respondent shall ensure that the laboratory used to perform the analyses for OU1 participates in a QA/QC program that complies with U.S. EPA guidance.

Upon request by U.S. EPA, the Respondent shall have such a laboratory analyze samples submitted by U.S. EPA for quality assurance monitoring. The Respondent shall provide U.S. EPA with the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis. The Respondent shall also ensure the provision of analytical tracking information consistent with OSWER Directive No. 9240.0-2B, *Extending the Tracking of Analytical Services to PRP-Lead Superfund Sites*.

Upon request by U.S. EPA, the Respondent shall allow U.S. EPA or its authorized representatives to take split and/or duplicate samples of any samples collected by the Respondent or their contractors or agents. The Respondent shall notify U.S. EPA not less than 14 business days in advance of any sample collection activity. U.S. EPA shall have the right to take any additional samples that it deems necessary.

Data Gap Description/Data Acquisition

As part of the FSP, the Respondent shall incorporate knowledge gained from preparation of the Technical Letter Report using currently available data. The Respondent then shall identify those areas of OU1 and nearby areas that require data and evaluation in order to define the extent of hazardous substances, pollutants or contaminants. This section of the FSP shall include a description of the number, types, and locations of samples to be collected. The FSP shall include an environmental program to accomplish the following:

- OU1 Reconnaissance:

  The Respondent shall conduct OU1 surveys which may include, but is not limited to: OU1 surveys including property, boundary, utility rights-of-way, and topographic information; land surveys; topographic mapping; and field screening.

- Geological Investigations (Soils and Sediments)

  The Respondent shall conduct geological investigations to determine the extent of hazardous substances, pollutants or contaminants in surface soils, subsurface soils and sediments at OU1 which may include, but is not limited to surficial soil samples, subsurface soil samples, soil boring and permeability sampling, sediments samples, survey soil gases, test pits, and identifying real-world horizontal, vertical, and elevation coordinates for all samples and OU1 features in accordance with U.S. EPA Region 5 electronic data requirements.

- Air Investigations

  The Respondent shall conduct air investigations to determine the extent of atmospheric hazardous substances, pollutants or contaminants at and from OU1 which may include, but is not limited to: air sampling, establishment of air monitoring stations, and preparation of wind roses.

- Hydrogeological Investigations (Ground Water)

  The Respondent shall conduct hydrogeological investigations of ground water related to OU1 to determine the horizontal and vertical distribution of hazardous substances, pollutants or contaminants in the groundwater and the extent, fate and transport of any groundwater plumes containing hazardous substances, pollutants or contaminants. The hydrogeological investigation may include, but is not limited to: installation of well systems, samples from upgradient, downgradient, private and municipal wells, samples during drilling (e.g., HydroPunch or Equivalent), hydraulic tests (such as pump tests, slug tests and grain size analyses), measuring ground-water elevations and determine horizontal and vertical sample locations in accordance with U.S. EPA Region 5 electronic data requirements, modeling, determination of the direction of regional and local groundwater flow, and the identification of the local uses of groundwater including the number, location, depth and use of nearby private and municipal wells. All groundwater investigations should be coordinated between U.S. EPA and the Respondents so that the data sets for both OU1 and OU2 groundwater can be easily combined and evaluated.

- Conduct Hydrogeological Investigations (Surface Water and Sediment)

  The Respondent shall conduct hydrogeological investigations to determine the nature and extent of contamination of surface water from OU1. The hydrogeological investigation may include, but is not limited to: collection of surface water samples, measurement of the surface-water elevation, and collection of sediment samples.

- Conduct River Sampling (Surface Water, Sediments and Benthic)

  The Respondent shall conduct sampling of the Little Vermilion River to determine the nature and extent of contamination along the entire Matthiessen and Hegeler Site (along both OU1 and OU2), downstream of the Site until the contamination from the Site has been fully defined and characterized, and upstream of the Site in order to obtain background samples. This may include, but is not limited to: collection of surface water samples, measurement of surface water elevation, collection of sediment samples, and collection of the benthic community (including fish) within the river.

- Waste Investigation

  The Respondent shall characterize the waste materials at OU1. Respondent shall conduct the following activities as part of these waste investigations:

  - Collect samples (Gas, Liquid, Solid)
  - Dispose of Derived waste (Gas, Liquid, Solid)

- Conduct Geophysical Investigation

  The Respondent shall conduct geophysical investigations to delineate waste depths, thicknesses and volume related to OU1; the elevations of the underlying natural soil layer and the extent of cover over fill areas including the following, as appropriate:

  - Surface Geophysical Activity
  - Magnetometer
  - Electromagnetic
  - Ground-Penetrating Radar
  - Seismic Refraction
  - Resistivity
  - OU1 Meteorology
  - Cone Penetrometer Survey
  - Remote Sensor Survey
  - Radiological Investigation
  - Test Pits, trenches and soil borings

- Conduct Ecological Investigation

  The Respondent shall conduct ecological investigations to assess the impact to aquatic and terrestrial ecosystems from the disposal, release and migration of hazardous substances, pollutants or contaminants at OU1 including:

  - Wetland and Habitat Delineation
  - Wildlife Observations
  - Community Characterization
  - Identification of Endangered Species
  - Biota Sampling and Population Studies

- Collect Contaminated Building Samples

  As necessary, the Respondent shall collect contaminated building samples related to OU1.

- Dispose of Investigation-Derived Waste

The Respondent shall characterize and dispose of investigation-derived wastes in accordance with local, State, and Federal regulations as specified in the FSP (see the Fact Sheet, *Guide to Management of Investigation-Derived Wastes*, 9345.3-03FS (January 1992)).

- Evaluate and Document the Need for Treatability Studies

  If the Respondent or U.S. EPA identify possible remedial actions for OU1 that involve treatment, the Respondent shall include treatability studies as outlined in Task 5 (see page 18) of this SOW unless the Respondent satisfactorily demonstrates to U.S. EPA that such studies are not needed. When treatability studies are needed, the Respondent shall plan initial treatability testing activities (such as research and study design) to occur concurrently with OU1 characterization activities.

Task 1.4 Quality Assurance Project Plan (QAPP)

The Respondent shall prepare a QAPP that is OU1 specific and covers sample analysis and data handling for samples collected during the RI, based on the Settlement Agreement and guidance provided by U.S. EPA.

The Respondent shall prepare the QAPP in accordance with "EPA Requirements of Quality Assurance Project Plans (QA/R-5)" (EPA/240/B-01/003, March 2001) and "EPA Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/600/R-02/0009, December 2002).

The Respondent shall demonstrate, in advance to U.S. EPA's satisfaction, that each laboratory it may use is qualified to conduct the proposed work. This includes use of methods and analytical protocols for the chemicals of concern in the media sampled within detection and quantification limits consistent with both QA/QC procedures and data quality objectives (DQOs) approved in the QAPP for OU1 by U.S. EPA. The laboratory must have and follow an approved QA program. If a laboratory not in the Contract Laboratory Program is selected, methods consistent with CLP methods that would be used at OU1 for the purposes proposed and QA/QC procedures approved by U.S. EPA shall be used. The Respondent shall only use laboratories which have a documented Quality Assurance Program which complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995) and "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01-002, March 2001) or equivalent documentation as determined by U.S. EPA.

The Respondent shall participate in a pre-QAPP meeting or conference call with U.S. EPA. The purpose of this meeting or conference call is to discuss QAPP requirements and obtain any clarification needed to prepare the QAPP.

Task 1.5 Health and Safety Plan

The Respondent shall prepare a Health and Safety Plan that conforms to their health and safety program and complies with the Occupational Safety and Health Administration (OSHA) regulations and protocols outlined in Title 29 of the Code of Federal Regulations (CFR), Part 1910. The Health and Safety Plan shall include the 11 elements described in the RI/FS Guidance such as a health and safety risk analysis, a description of monitoring and personal protective equipment, medical monitoring, and site control. U.S. EPA does not "approve" the Respondent's Health and Safety Plan, but rather U.S. EPA reviews it to ensure that all the necessary elements are included, and that the plan provides for the protection of human health and the environment, and after that review provides comments as may be necessary and appropriate. The safety plan must, at a minimum, follow the U.S. EPA's guidance document *Standard Operating Safety Guides* (Publication 9285.1-03, PB92-963414, June 1992).

TASK 2: COMMUNITY INVOLVEMENT SUPPORT

U.S. EPA has the responsibility of developing and implementing community involvement activities for the Site. The critical community involvement planning steps performed by U.S. EPA and Illinois EPA include conducting community interviews and developing a Community Involvement Plan. Although implementing the Community Involvement Plan is the responsibility of U.S. EPA, the Respondent, if directed by U.S. EPA, shall assist by providing information regarding OU1's history; participating in public meetings; assisting in preparing fact sheets for distribution to the general public; or conducting other activities approved by U.S. EPA. All PRP-conducted community involvement activities shall be planned and developed in coordination with U.S. EPA.

TASK 3: SITE CHARACTERIZATION

Task 3.1 Investigate and Define Site Physical and Biological Characteristics

The Respondent shall implement the Work Plan/Field Sampling Plan and collect data on the physical and biological characteristics of OU1 and its surrounding areas including the physical physiography, geology, and hydrology, and specific physical characteristics identified in the work plan. This information will be ascertained through a combination of physical measurements, observations, and sampling efforts and will be utilized to define potential transport pathways and human ecological receptor populations. In defining OU1's physical characteristics the Respondent will also obtain sufficient engineering data (such as pumping characteristics) for the projection of contaminant fate and transport, and development and screening of remedial action alternatives, including information to assess treatment technologies.

The Respondent shall provide the RPM or the entity designated by the RPM with a paper copy and an electronic copy (according to U.S. EPA Region 5 format specification) of laboratory data within the monthly progress reports and in no event later than 90 days after samples are shipped for analysis. In addition, the monthly

progress reports will summarize field activities (including drilling locations, depths and field notes if requested by RPM), problems encountered, solutions to problems, and upcoming field activities.

Define Sources of Contamination

The Respondent shall locate each source of contamination related to OU1. For each location, Respondents shall determine the aerial extent and depth of contamination by sampling at incremental depths on a sampling grid. Respondents shall determine the physical characteristics and chemical constituents and their concentrations for all known and discovered sources of contamination. The Respondent shall conduct sufficient sampling to define the boundaries of the contaminant sources to the level established in the QAPP and DQOs. Defining the source of contamination will include analyzing the potential for contaminant release (e.g., long term leaching from soil), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information to assess treatment technologies.

Describe the Nature and Extent/Fate and Transport of Contamination

The Respondent shall gather information to describe the nature and extent of contamination related to OU1 as a final step during the field investigation. To describe the nature and extent of contamination, the Respondent will utilize the information on site physical and biological characteristics and sources of contamination to give a preliminary estimate of the contaminants that may have migrated. The Respondent will then implement an iterative monitoring and study program identified in the work plan or sampling plan such that by using analytical techniques sufficient to detect and quantify the concentration of contaminants, the migration of contaminants through the various media at site can be determined. In addition, the Respondent shall gather data for calculations of contaminant fate and transport. This process is continued until the area and depth of contamination are known to the level of contamination established in the QAPP and DQOs.

Evaluate site characteristics

The Respondent shall analyze and evaluate the data to describe: (1) OU1 physical and biological characteristics, (2) contaminant source characteristics, (3) nature and extent of contamination and (4) contaminant fate and transport. Results of OU1 physical characteristics, source characteristics, and extent of contamination analyses are utilized in the analysis of contaminant fate and transport. The Respondent shall evaluate the actual and potential magnitude of releases from the sources, and horizontal and vertical spread of contamination as well as mobility and persistence of contaminants. Where modeling is appropriate, such models shall be identified to EPA in a technical memorandum prior to their use. All data and programming, including any proprietary programs, shall be made available to U.S. EPA together with a sensitivity analysis. The RI data shall be presented electronically according to U.S. EPA Region 5 format

requirements. Analysis of data collected for site characterization will meet the DQOs developed in the QAPP and stated in the FSP (or revised during the RI).

Risk Assessment

The Respondent shall cooperate with U.S. EPA and their contractor to conduct one comprehensive baseline risk assessment to determine whether contaminants pose a current or potential risk to human health and the environment in the absence of any remedial action. The Respondent will be responsible for gathering and collecting the data related to the risk assessment for OU1 and performing the steps of the risk assessment as related to OU1, and U.S. EPA and its contractors will be responsible for gathering and collecting data for the risk assessment relating to OU2 and performing the steps of the risk assessment as related to OU2. The baseline risk assessment will address the contaminant identification, exposure assessment, toxicity assessment, and risk characterization at both OU1 and OU2 and will be combined into one cohesive document. Information (i.e. data tables, summaries, interpretations, calculations) relating to OU2 will be supplied by U.S. EPA and its contractors to the Respondents and the Respondents will then be responsible for physically combining the information from both OU1 and OU2 into one Comprehensive Risk Assessment Report. If a portion of the baseline risk assessment work relates to both OU1 and OU2, then US. EPA and its contractor will perform that portion of the work with input from the Respondent, unless the Respondent prefers to perform the work with input from U.S. EPA and its contractors.

The baseline human health risk assessment shall focus on actual and potential risks to persons coming into contact with hazardous substances, pollutants or contaminants as well as risks to the nearby residential, recreational and industrial worker populations from exposure to hazardous substances, pollutants or contaminants in groundwater, soils, sediments, surface water, air, and ingestion of contaminated organisms in nearby, impacted ecosystems. The human health risk assessment shall define central tendency and reasonable maximum estimates of exposure for current land use conditions and reasonable future land use conditions. The human health risk assessment shall use data from the Site and nearby areas to identify the contaminants of concern (COC), provide an estimate of how and to what extent human receptors might be exposed to these COCs, and provide an assessment of the health effects associated with these COCs. The human health risk assessment shall project the potential risk of health problems occurring if no cleanup action is taken at the Site and/or nearby areas, and establish target action levels for COCs (carcinogenic and non-carcinogenic).

The human health risk assessment shall be conducted in accordance with U.S. EPA guidance, as applicable, including, at a minimum: "Risk Assessment Guidance for Superfund (RAGS), Volume I - Human Health Evaluation Manual (Part A)," Interim Final (EPA-540-1-89-002)," OSWER Directive 9285.7-01A; December 1, 1989; and "Risk Assessment Guidance for Superfund (RAGS), Volume I - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of

Superfund Risk Assessments)," Interim, (EPA 540-R-97-033), OSWER 9285.7-01D, January, 1998.

The human health risk assessment shall also be conducted in accordance with the following additional guidance, as applicable, found in the following ISAPI OSWER directives:

1) "Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities," OSWER Directive 9200.4-27; August, 1998,

2) "Implementation of the Risk Assessment Guidance for Superfund (RAGS) Volume I - Human Health Evaluation Manual, (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments) (Interim)," OSWER Directive 9285.7-01D-1; December 17, 1997,

3) "Soil Screening Guidance: Technical Background Document," OSWER Directive 9355.4-17A; May 1, 1996 and "Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER Directive 9355.4 {24; March 2001},

4) "Soil Screening Guidance: User's Guide," Publication 9355.4-23; April, 1996,

5) "Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities," OSWER Directive 9355.4-12; July 14, 1994,

6) "Guidance Manual for the Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children," Publication 9285.7-15-1; February, 1994, and associated, clarifying Short Sheets on IEUBK Model inputs, including but not limited to OSWER 9285.7-32 through 34, as listed on the OSWER lead internet site at www.epa.gov/superfund/programs/lead/prods.htm,

7) "Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children," Version 0.99D, NTIS PB94-501517, 1994 or "Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children," Windows© version, 2001,

8) "Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual: (Part B, Development of Risk-based Preliminary Remediation Goals)," Interim, OSWER Directive 9285.7-01B; December, 1991,

9) "Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors," OSWER Directive 9285.6-03; March 25, 1991, and

10) "Exposure Factors Handbook," Volumes I, II, and III; August 1997 (EPA/600/P-95/002Fa,b,c).

11) "Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil," December, 1996. This document may be downloaded from the Internet at the following address: www.epa.gov/superfund/programs/lead/prods.htm.

12) "Superfund Lead- Contaminated Residential Sites Handbook," December 2002 by the EPA Lead Sites Workgroup.

Additional applicable or relevant guidance may be used only if approved by U.S. EPA.

The Human Health Risk Assessment shall be prepared according to the guidelines outlined below:

- Hazard Identification (sources) - Review available information on the hazardous substances present and identify the major contaminants of concern.

- Dose-Response Assessment - Contaminants of concern should be selected based on their intrinsic toxicological properties.

- Prepare Conceptual Exposure/Pathway Analysis - Critical exposure pathways (e.g., drinking water) shall be identified and analyzed. The proximity of contaminants to exposure pathways and their potential to migrate into critical exposure pathways shall be assessed.

- Characterization of the Site and Potential Receptors - Identify and characterize human populations in the exposure pathways.

- Exposure Assessment - The exposure assessment will identify the magnitude of actual or potential human exposures, the frequency and duration of these exposures, and the routes by which receptors are exposed. The exposure assessment shall include an evaluation of the likelihood of such exposures occurring and shall provide the basis for the development of acceptable exposure levels. In developing the exposure assessment, develop reasonable maximum estimates of exposure for both current land use conditions and potential land use conditions at the Site.

- Risk Characterization - During risk characterization, chemical-specific toxicity information, combined with quantitative and qualitative information from the exposure assessment, shall be compared to measured levels of contaminant exposure levels and the levels predicted through environmental fate and transport modeling. These comparisons shall determine whether concentrations of contaminants at or near the Site are affecting or could potentially affect human health.

- Identification of Limitations/Uncertainties - Identify critical assumptions (e.g., background concentrations and conditions) and uncertainties in the report.

- Conceptual Model - Based on contaminant identification, exposure assessment, toxicity assessment, and risk characterization, develop a conceptual model of the Site.

- Final Human Health Risk Assessment Report - After the draft Human Health Risk Assessment Report has been reviewed and commented on by U.S. EPA, Respondent and U.S. EPA's contractor will incorporate U.S. EPA comments and submit the final Human Health Risk Assessment Report.

Ecological Risk Assessment Report - The Respondent shall cooperate with U.S. EPA and their contractor to conduct one comprehensive ecological risk assessment to determine whether contaminants pose a current or potential risk to ecological receptors in the absence of any remedial action. The Respondent will be responsible for gathering and collecting the data related to the ecological risk assessment for OU1 and performing the steps of the ecological risk assessment as related to OU1, and U.S. EPA and its contractors will be responsible for gathering and collecting data for the ecological risk assessment relating to OU2 and performing the steps of the ecological risk assessment as related to OU2. The ecological risk assessment will address the contaminant identification, exposure assessment, toxicity assessment, and risk characterization at both OU1 and OU2 and will be combined into one cohesive document. Information (i.e. data tables, summaries, interpretations, calculations) relating to OU2 will be supplied by U.S. EPA and its contractors to the Respondents and the Respondents will then be responsible for physically combining the information from both OU1 and OU2 into one Comprehensive Ecological Risk Assessment Report. If a portion of the ecological risk assessment work relates to both OU1 and OU2, then US. EPA and its contractor will perform that portion of the work with input from the Respondent, unless the Respondent prefers to perform the work with input from U.S. EPA and its contractors.

The ecological risk assessment shall be conducted in accordance with U.S. EPA guidance, as applicable, including, at a minimum: "Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments, (EPA-540-R-97-006, June 1997), OSWER Directive 9285.7-25. The Ecological Risk Assessment Report that addresses the following:

- Hazard Identification (sources) - Review available information on the hazardous substances present and identify the major contaminants of concern.

- Dose-Response Assessment - Contaminants of concern should be selected based on their intrinsic toxicological properties.

- Prepare Conceptual Exposure/Pathway Analysis - Critical exposure pathways (e.g., surface water) shall be identified and analyzed. The proximity of contaminants to exposure pathways and their potential to migrate into critical exposure pathways shall be assessed.

- Characterization of the Site and Potential Receptors - Identify and characterize environmental exposure pathways.

- Selection of Chemicals, Indicator Species, and End Points - In preparing the assessment, select representative chemicals, indicator species (species that are especially sensitive to environmental contaminants), and end points on which to concentrate.

- Exposure Assessment - The exposure assessment will identify the magnitude of actual or environmental exposures, the frequency and duration of these exposures, and the routes by which receptors are exposed. The exposure assessment shall include an evaluation of the likelihood of such exposures occurring and shall provide the basis for the development of acceptable exposure levels. In developing the exposure assessment, develop reasonable maximum estimates of exposure for both current land use conditions and potential land use conditions at the Site.

- Toxicity Assessment/Ecological Effects Assessment - The toxicity and ecological effects assessment will address the types of adverse environmental effects associated with chemical exposures, the relationships between magnitude of exposures and adverse effects, and the related uncertainties for contaminant toxicity (e.g., weight of evidence for a chemical's carcinogenicity).

- Risk Characterization - During risk characterization, chemical-specific toxicity information, combined with quantitative and qualitative information from the exposure assessment, shall be compared to measured levels of contaminant exposure levels and the levels predicted through environmental fate and transport modeling. These comparisons shall determine whether concentrations of contaminants at or near the Site are affecting or could potentially affect the environment.

- Identification of Limitations/Uncertainties - Identify critical assumptions (e.g., background concentrations and conditions) and uncertainties in the report.

- Conceptual Model - Based on contaminant identification, exposure assessment, toxicity assessment, and risk characterization, develop a conceptual model of the Site.

- Final Ecological Risk Assessment Report - After the draft Ecological Risk Assessment Report has been reviewed and commented on by U.S. EPA, Respondent and U.S. EPA's contractor will incorporate U.S. EPA comments and submit the final Ecological Risk Assessment Report.

Current and Future Land Uses and Reuses Assessment

As an Attachment to the RI Report, the Respondents shall submit a Memorandum to U.S. EPA for review and approval that evaluates the current and reasonably anticipated future land uses for OU1. The Memorandum shall identify: 1) past uses of OU1 including title and lien information; 2) current uses of OU1 and the neighboring areas; 3) the owner's plans for OU1 following cleanup; 4) applicable zoning laws and ordinances; 5) current zoning; 6) applicable local area land use plans, master plans and how they affect OU1; 7) existing local restrictions for OU1; 8) OU1 boundaries; 9) groundwater use determinations, well head protection areas, recharge areas and other areas identified in the state's Comprehensive Ground Water Protection Program; 10) Flood plains, wetland, or engendered or threatened species; and 11) utility rights of way.

If U.S. EPA, in its sole discretion determines that a Reuse Assessment is necessary for OU1, Respondent will perform the Reuse Assessment in accordance with U.S. EPA guidance, including but not limited to "Reuse Assessments: A Tool To Implement The Superfund Land Use Directive, OSWER 9355.7-06P, June 4, 2001 upon request of U.S. EPA. The Reuse Assessment should provide sufficient information to develop realistic assumptions of the reasonably anticipated future uses for OU1.

TASK 4: REMEDIAL INVESTIGATION (RI) REPORT

- The Final RI/FS Planning documents will contain the schedule for submission of the RI Report, Risk Assessment Reports, Treatability Study Reports, Feasibility Study Reports, and all other deliverables deemed appropriate by U.S. EPA.

- Based upon that final approved schedule, the Respondent and U.S. EPA's contractor shall cooperate to submit to U.S. EPA, for review and approval pursuant to Section II, an RI Report addressing all of the Site and nearby areas.

- The RI Report shall be consistent with the Settlement Agreement and this SOW.

- The RI Report shall accurately establish Site characteristics such as media contaminated, extent of contamination, and the physical boundaries of the contamination. Pursuant to this objective, only the essential amount of detailed data necessary to determine the key(s) contaminant(s) movement and extent of contamination need be obtained.
- The key contaminant(s) must be selected based on persistence and mobility in the environment and the degree of hazard.

- The key contaminant(s) identified in the RI shall be evaluated for receptor exposure and an estimate of the key contaminant(s) level reaching human or environmental receptors must be made.

- Existing standards and guidelines such as drinking-water standards, water-quality criteria, and other criteria accepted by the U.S. EPA as appropriate for the situation, may be used to evaluate effects on human receptors that may be exposed to the key contaminant(s) above appropriate standards or guidelines.

- The RI Report shall include the following:

1) Executive Summary

2) Background -
Assemble and review available facts about the regional conditions and conditions specific to the site under investigation.

3) Investigation –
i Site Reconnaissance
ii. Field Investigation & Technical Approach
iii. Chemical Analysis & Analytical Methods
iv. Field Methodologies
    - Biological
    - Surface Water
    - Sediment
    - Soil Boring
    - Soil Sampling
    - Monitoring Well Installation
    - Groundwater Sampling
    - Hydrogeological Assessment
    - Air Sampling
    - Waste Investigation
    - Geophysical Investigation

4) Characteristics
    - Geology
    - Hydrogeology
    - Meteorology
    - Demographics and Land Use

5) Ecological Assessment

6) Nature and Extent of Contamination
    - Contaminant Sources
    - Contaminant Distribution and Trends
    - Fate and Transport

- Contaminant Characteristics
- Transport Processes
- Contaminant Migration Trends

7) Human Risk Assessment
   - Hazard Identification (sources)
   - Dose-Response Assessment
   - Prepare Conceptual Exposure/Pathway Analysis
   - Characterization of Site and Potential Receptors
   - Exposure Assessment
   - Risk Characterization
   - Identification of Limitations/Uncertainties
   - Conceptual Model

8) Ecological Risk Assessment
   - Hazard Identification (sources)
   - Dose-Response Assessment
   - Prepare Conceptual Exposure/Pathway Analysis
   - Characterization of Site and Potential Receptors
   - Select Chemicals, Indicator Species, and End Points
   - Exposure Assessment
   - Toxicity Assessment/Ecological Effects Assessment
   - Risk Characterization
   - Identification of Limitations/Uncertainties
   - Conceptual Model

9) Summary and Conclusions

TASK 5: TREATABILITY STUDIES

If U.S. EPA or the Respondents determine that treatability testing is necessary as regards OU1, the Respondent shall conduct treatability studies as follows. In addition, if applicable, the Respondent shall use the testing results and operating conditions in the detailed design of the selected remedial technology. A treatability study should consist of the following activities.

Task 5.1 Determine Candidate Technologies and of the Need for Testing

The Respondent shall submit a Candidate Technologies and Testing Needs Technical Memorandum, subject to U.S. EPA and Illinois EPA review and U.S. EPA approval that identifies candidate technologies for a treatability studies program. The Respondent shall submit the technical memorandum as early as project planning (Task 1) and no later than at the time of submittal of the RI Report to avoid any potential delays in the FS. The list of candidate technologies shall cover the range of technologies required for alternatives analysis. The Respondent shall determine and refine the specific data requirements for the testing program during OU1 characterization and the development and screening of remedial alternatives.

Task 5.2 Conduct Literature Survey and Determine the Need for Treatability Testing

Within the Candidate Technologies and Testing Needs Technical Memorandum, the Respondent shall conduct a literature survey to gather information on the performance, relative costs, applicability, removal efficiencies, operation and maintenance (O&M) requirements, and implementability of candidate technologies. If the Respondent has not sufficiently demonstrated practical candidate technologies, or if such technologies cannot be adequately evaluated for OU1 on the basis of the available information, the Respondent shall conduct treatability testing. If U.S. EPA determines that treatability testing is necessary, and the Respondent cannot demonstrate to U.S. EPA's satisfaction that such testing is unnecessary, then the Respondent shall submit a work plan to U.S. EPA and Illinois EPA that outlines the steps and the data necessary to evaluate and initiate the treatability testing program within 30 days of a request of the U.S. EPA.

Task 5.3 Evaluate Treatability Studies

Once a decision has been made to perform treatability studies for OU1, U.S. EPA will decide on the type of treatability testing to use (e.g., bench versus pilot). Because of the time required to design, fabricate, and install pilot scale equipment as well as perform testing for various operating conditions, the decision to perform pilot testing will be made as early in the process as possible to minimize potential delays of the FS. To assure that a treatability testing program is completed on time, and with accurate results, within 30 days of a request by U.S. EPA, the Respondent shall either submit a separate Treatability Testing Work Plan and SAP, or amendments to the original RI/FS Work Plan, FSP, QAPP for U.S. EPA and Illinois EPA review and U.S. EPA approval.

Task 5.4 Treatability Testing and Deliverables

Treatability Testing Work Plan and Sampling and Analysis Plan (SAP)

Within 30 days of a request of U.S. EPA related to OU1, the Respondent shall prepare a Treatability Testing Work Plan and a SAP, or amendments to the original RI/FS Work Plan, FSP and QAPP for U.S. EPA and Illinois EPA review and U.S. EPA approval that describes OU1 background, the remedial technology(ies) to be tested, test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety, and residual waste management. The Respondent shall document the DQOs for treatability testing as well. If pilot scale treatability testing is to be performed, the Treatability Study Work Plan shall describe pilot plant installation and start-up, pilot plant operation and maintenance procedures, operating conditions to be tested, a sampling plan to determine pilot plant performance, and a detailed health and safety plan. If testing is to be performed off-site, the plans shall address all permitting requirements. The requirements of SAPs are outlined in Task 1.3.2 of this SOW.

Treatability Study Health and Safety Plan

If the original Health and Safety Plan is not adequate for defining the activities to be performed during the treatability tests, the Respondent shall submit a separate or amended Health and Safety Plan. Task 1.2.2 of this SOW provides additional information on the requirements of the Health and Safety Plan. U.S. EPA and Illinois EPA review, but do not "approve" the Treatability Study Health and Safety Plan.

Treatability Study Evaluation Report

Following the completion of the treatability testing, the Respondent shall analyze and interpret the testing results in a technical report to U.S. EPA and Illinois EPA. Respondents shall submit the treatability study report according to the schedule in the Treatability Study Work Plan. This report may be a part of the Site Characterization Technical Memorandum, the RI Report or submitted as a separate deliverable. The Treatability Study Evaluation Report shall evaluate each technology's effectiveness, implementability and cost, and actual results as compared with predicted results. The report shall also evaluate full scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

TASK 6: DEVELOPMENT AND SCREENING OF ALTERNATIVES (Technical Memorandum)

The Respondent and U.S. EPA and its contractor shall cooperate to develop and screen remedial alternatives for the Site to determine an appropriate range of waste management options to be evaluated and to produce a single alternatives report. To the extent the remedial alternatives under consideration relate to OU1, Respondent shall take the lead in evaluating the alternatives. To the extent the remedial alternatives under consideration relate to OU2, U.S. EPA and its contractor shall take the lead in evaluating the alternatives. If it is found that an alternative relates to both OU1 and OU2, then US. EPA and its contractor will screen and develop this alternative with input from the Respondent, unless the Respondent prefers to screen and develop the alternative with input from U.S. EPA and its contractors.

This range of alternatives shall include, as appropriate, options in which treatment is used to reduce the toxicity, mobility, or volume of wastes, but which vary in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; options involving containment with little or no treatment; options involving both treatment and containment; and a no-action alternative. The following activities shall be performed as a function of the development and screening of remedial alternatives.

Task 6.1 Alternatives Development and Screening Deliverables

The Respondent and/or U.S. EPA's contractor shall prepare and submit three technical memoranda for this task: a Remedial Action Objectives Technical Memorandum, an

Alternative Screening Technical Memorandum and a Comparative Analysis of Alternatives Technical Memorandum. These memos can be combined into a single memo as appropriate.

Remedial Action Objectives Technical Memorandum

The Respondent shall submit a Remedial Action Objectives Technical Memorandum to Illinois EPA and U.S. EPA for review and approval for OU1. The Remedial Action Objectives Technical Memorandum shall be submitted at the same time as the RI Report. Based on the baseline human health and ecological risk assessments, the site-specific remedial action objectives shall be documented in a Remedial Action Objectives Technical Memorandum. The remedial action objectives shall specify the contaminants of concern and the media of interest; potential exposure pathways and receptors; and an acceptable contaminant level or range of levels (at particular locations for each exposure route) that are protective of human health and the environment. Remedial Action Objectives shall be developed by considering the factors set forth in 40 C.F.R. § 300.430(e)(2)(i). The Respondent shall incorporate U.S. EPA's comments on the Remedial Action Objectives Technical Memorandum in the Alternatives Screening Technical Memorandum.

Alternatives Screening Technical Memorandum

The Respondent shall submit an Alternatives Screening Technical Memorandum to U.S. EPA for review and approval for OU1. The Alternatives Screening Technical Memorandum shall summarize the work performed during and the results of each of the above tasks, and shall include an alternatives array summary. If required by U.S. EPA, the Respondent shall modify the alternatives array to assure that the array identifies a complete and appropriate range of viable alternatives to be considered in the detailed analysis. The Alternatives Screening Technical Memorandum shall document the methods, the rationale and the results of the alternatives screening process. The Respondent shall incorporate U.S. EPA's comments on the Alternatives Screening Technical Memorandum in the Comparative Analysis of Alternatives Technical Memorandum. The Respondent shall submit the Alternatives Screening Technical Memorandum within 21 calendar days after receipt of U.S. EPA's comments on the Remedial Action Objectives Technical Memorandum.

1) **Develop General Response Actions**

The Alternatives Screening Technical Memorandum shall develop general response actions for each medium of interest including containment, treatment, excavation, pumping, or other actions, singly or in combination, to satisfy the U.S. EPA-approved remedial action objectives.

2) **Identify Areas or Volumes of Media**

The Alternatives Screening Technical Memorandum shall identify areas or volumes of media to which the general response actions may apply, taking into account requirements for protectiveness as identified in the remedial action objectives. The memorandum shall also take into account the chemical and physical characterization of the Site.

3) Identify, Screen, and Document Remedial Technologies

The Alternatives Screening Technical Memorandum shall identify and evaluate technologies applicable to each general response action to eliminate those that cannot be implemented at the Site. The memorandum shall refine applicable general response actions to specify remedial technology types. The memorandum shall identify technology process options for each of the technology types concurrently with the identification of such technology types or following the screening of considered technology types. The memorandum shall evaluate process options on the basis of effectiveness, implementability, and cost factors to select and retain one or, if necessary, more representative processes for each technology type. The memorandum shall summarize and include the technology types and process options in the Alternatives Screening Technical Memorandum. Whenever practicable, the alternatives shall also consider the CERCLA preference for treatment over conventional containment or land disposal approaches.

The Alternatives Screening Technical Memorandum shall provide a preliminary list of alternatives to address contaminated soil, sediments, surface water, groundwater, and air contamination at the Site that shall consist of, but is not limited to, treatment technologies, removal and off-site treatment/disposal, removal and on-site disposal, and in-place containment for soils, sediments, and wastes. See 40 CFR 300.430(e)(1)-(7). The reasons for eliminating any alternatives shall be specified.

4) Assemble and Document Alternatives

The selected representative technologies shall be assembled into alternatives for each affected medium or for the Site as a whole. Together, all of the alternatives shall represent a range of treatment and containment combinations that shall address either the medium or the Site as a whole. A summary of the assembled alternatives and their related ARARs shall be assembled for the Alternatives Screening Technical Memorandum. The reasons for eliminating alternatives during the preliminary screening process shall be specified.

5) Refine Alternatives

The remedial alternatives shall be refined to identify the volumes of contaminated media addressed by the proposed processes and size critical unit operations as necessary. Sufficient information shall be collected for an adequate comparison of alternatives. The remedial action objectives shall be modified for each chemical in each medium as necessary to incorporate any new human health and ecological risk

assessment information presented in the baseline human health and ecological risk assessment reports. Additionally, ARARs shall be updated as the remedial alternatives are refined.

6) Conduct and Document Screening Evaluation of Each Alternative

A final screening process may be performed based on short and long term aspects of effectiveness, implementability, and relative cost. Generally, this screening process is only necessary when there are many feasible alternatives available for a detailed analysis. If necessary, the screening of alternatives shall be conducted to assure that only the alternatives with the most favorable composite evaluation of all factors are retained for further analysis. As appropriate, the screening shall preserve the range of treatment and containment alternatives that was initially developed. The range of remaining alternatives shall include options that use treatment technologies and permanent solutions to the maximum extent practicable. An Alternatives Screening Technical Memorandum shall be prepared that summarizes the results and reasoning employed in screening; arrays the alternatives that remain after screening; and identifies the action-specific ARARs for the alternatives that remain after screening.

TASK 7: DETAILED ANALYSIS of ALTERNATIVES (FS REPORT)

The Respondent and U.S. EPA's contractor shall cooperate to present a detailed analysis of remedial alternatives to provide U.S. EPA with the information needed to select a Site remedy. To the extent the remedial alternatives under consideration address risks related to OU1, Respondent shall take the lead in evaluating the alternatives. To the extent the remedial alternatives under consideration address risks related to OU2, U.S. EPA's contractor shall take the lead in evaluating the alternatives. If it is found that an alternative relates to both OU1 and OU2, then US. EPA and its contractor will evaluate this alternative with input from the Respondent, unless the Respondent prefers to evaluate the alternative with input from U.S. EPA and its contractors. These principles shall apply to all the subparts of this Task 7.

Task 7.1 Detailed Analysis of Alternatives

The Respondent and U.S. EPA's contractor shall conduct a detailed analysis of the remedial alternatives for the Site with the assistance of U.S. EPA. The detailed analysis shall include an analysis of each remedial option against a set of nine evaluation criteria, and a comparative analysis of all options using the same nine criteria as a basis for comparison.

Apply Nine Criteria and Document Analysis

The nine evaluation criteria shall be applied to the assembled remedial alternatives to ensure that the selected remedial alternative will protect human health and the environment and meet remedial action objectives; will comply with, or include a waiver of, ARARs; will be cost-effective; will utilize permanent solutions and alternative

treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element. The evaluation criteria include: (1) overall protection of human health and the environment and how the alternative meets each of the remedial action objectives; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) cost; (8) state (or support agency) acceptance; and (9) community acceptance. (Note: criteria 8 and 9 are considered after the RI/FS report has been released to the general public.) For each alternative the following shall be provided: (1) A description of the alternative that outlines the waste management strategy involved and identifies the key ARARs associated with each alternative, and (2) A discussion of the individual criterion assessment. If the Respondent does not have direct input on criteria (8) state (or support agency) acceptance and (9) community acceptance, U.S. EPA will address these criteria.

Task 7.2 Compare Alternatives Against Each Other and Document the Comparison of Alternatives

A comparative analysis between the remedial alternatives shall be performed. That is, each alternative shall be compared against the other alternatives using the evaluation criteria as a basis of comparison. U.S. EPA will identify and select the preferred alternative. The Respondent and U.S. EPA's contractor shall cooperate, with the assistance of U.S. EPA, to prepare a Comparative Analysis of Alternatives Technical Memorandum, which summarizes the results of the comparative analysis and fully and satisfactorily addresses and incorporates U.S. EPA's comments on the Alternatives Screening Technical Memorandum. U.S. EPA's comments on the Comparative Analysis of Alternatives Technical Memorandum shall be incorporated in the FS Report. The Comparative Analysis of Alternatives Technical Memorandum shall be submitted within 21 calendar days after receipt of U.S. EPA's comments on the Alternatives Screening Technical Memorandum.

Alternatives Analysis for Institutional Controls

For any Alternatives that rely on Institutional Controls, Respondents shall include in the Alternatives Screening Technical Memorandum, Comparative Analysis of Alternative Technical Memorandum and Feasibility Study an evaluation of the following: 1) *Overall Protection of Human Health and the Environment* including what specific institutional control components will ensure that the alternative will remain protective and how these specific controls will meet remedial action objectives; 2) *Compliance with ARARs;* 3) *Long Term Effectiveness* including the adequacy and reliability of institutional controls and how long the institutional control must remain in place; 4) *Short Term Effectiveness* including the amount of time it will take to impose the Institutional Control; 5) *Implementability* including research and documentation that the proper entities (e.g. PRPs, state, local government entities, local landowners conservation organizations) are willing to enter into any necessary agreement or restrictive covenant with the proper entities and/or that laws governing the restriction

exist or allow implementation of the institutional control; 6) *Cost* including the cost to implement, maintain, monitor, and enforce the institutional control; and 7) *State and Community Acceptance* of the Institutional Control.

Task 7.3 Feasibility Study Report

Within 45 days after receipt of U.S. EPA's comments on the Comparative Analysis of Alternatives Technical Memorandum, the Respondent and U.S. EPA's contractor shall jointly prepare and the Respondent will submit a FS Report to U.S. EPA for its review pursuant to Section 2. The FS report shall summarize the development and screening of the remedial alternatives and present the detailed analysis of remedial alternatives. In addition, the FS Report shall also include the information U.S. EPA will need to prepare relevant sections of the Record of Decision (ROD) for the Site [see Chapters 6 and 9 of U.S. EPA's *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* (EPA 540-R-98-031, July 1999) for the information that is needed].

TASK 8: PROGRESS REPORTS

The Respondent shall submit monthly written progress reports to U.S. EPA and Illinois EPA concerning actions undertaken pursuant to the Settlement Agreement and this SOW, beginning 30 calendar days after the effective date of the Settlement Agreement, until the termination of the Settlement Agreement, unless otherwise directed in writing by the RPM. These reports shall include, but not be limited to, a description of all significant developments during the preceding period, including the specific work that was performed and any problems that were encountered; a paper and electronic copies (formatted according to U.S. EPA specifications) copy and summary of the analytical data that was received during the reporting period; and the developments anticipated during the next reporting period, including a schedule of work to be performed, anticipated problems, and actual or planned resolutions of past or anticipated problems. The monthly progress reports will summarize the field activities conducted each month including, but not limited to drilling and sample locations, depths and descriptions; boring logs; sample collection logs; field notes; problems encountered; solutions to problems; a description of any modifications to the procedures outlined in the RI/FS Work Plan, the FSP, QAPP or Health and Safety Plan, with justifications for the modifications; a summary of all data received during the reporting period and the analytical results; and upcoming field activities. In addition, the Respondent shall provide the RPM or the entity designated by the RPM with all laboratory data related to OU1 within the monthly progress reports and in no event later than 90 days after samples are shipped for analysis.

SCHEDULE FOR MAJOR DELIVERABLES

Deliverable	Deadline
Technical Letter Report	60 days after date of Settlement Agreement
RI/FS Planning Documents related to OU1	60 days after date of Settlement Agreement
Monthly Progress Reports	10th business day of each month (commencing 30 days after effective date of Settlement Agreement)
Miscellaneous Documents	In accordance with submittal date provided by RPM

The Final RI/FS Planning documents will contain the schedule for submission of the RI Report (draft and final), Risk Assessment Reports, Treatability Study Reports, Feasibility Study Reports, and all other deliverables deemed appropriate by U.S. EPA.

EXHIBIT A
PARTIAL LIST OF GUIDANCE

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RI/FS process. The majority of these guidance documents, and additional applicable guidance documents, may be downloaded from the following websites:

http://www.epa.gov/superfund/pubs.htm (General Superfund)
http://cluin.org (Site Characterization, Monitoring and Remediation)
http://www.epa.gov/ORD/NRMRL/Pubs (Site Characterization and Monitoring)
http://www.epa.gov/quality/qa_docs.html#guidance (Quality Assurance)
http://www.epa.gov/superfund/programs/risk/toolthh.htm (Risk Assessment - Human)
http://www.epa.gov/superfund/programs/risk/tooleco.htm (Ecological Risk Assessment)
http://www.epa.gov/superfund/programs/lead (Risk Assessment - Lead)
http://cfpub.epa.gov/ncea (Risk Assessment - Exposure Factors/Other)
http://www.epa.gov/nepis/srch.htm (General Publications Clearinghouse)
http://www.epa.gov/clariton/clhtml/pubtitle.html
http://www.epa.gov/superfund/programs/lead/products.htm(General Publications Clearinghouse)

I. The (revised) National Contingency Plan;

II. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, U.S. EPA, Office of Emergency and Remedial Response, OSWER Directive No. 9355.3-01, EPA/540/G-89/004, October 1988.

III. *Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites*, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-91/001, February 1991.

IV. *Implementing Presumptive Remedies*, U.S. EPA, Office of Emergency and Remedial Response, EPA-540-R-97-029, October 1997.

V. *Presumptive Remedy for CERCLA Municipal Landfill Sites*, U.S. EPA, OSWER Directive No. 9355.0-49FS, EPA-540-F-93-035, September 1993.

VI. *Presumptive Remedies: CERCLA Landfill Caps RI/FS Data Collection Guide*, U.S. EPA, OSWER 9355.3-18FS, EPA/540/F-95/009, August 1995.

VII. *Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Ground Water at CERCLA Sites*, OSWER 9283.1-12, EPA-540-R-96-023, October 1996.

VIII. *Field Analytical and Site Characterization Technologies Summary of Applications*, U.S. EPA, EPA-542-F-97-024, November 1997.

IX. *CLU-IN Hazardous Waste Clean-Up Information World Wide Web Site*, U.S. EPA, EPA-542-F-99-002, February 1999.

X. *Field Sampling and Analysis Technology Matrix and Reference Guide*, U.S. EPA, EPA-542-F-98-013, July 1998.

XI. *Subsurface Characterization and Monitoring Techniques: A Desk Reference Guide, Volumes 1 and 2*, U.S. EPA, EPA/625/R-93/003, May 1993.

XII. *Use of Airborne, Surface, and Borehole Geophysical Techniques at Contaminated Sites: A Reference Guide*, U.S. EPA, EPA/625/R-92/007(a,b), September 1993.

XIII. *Innovations in Site Characterization: Geophysical Investigation at Hazardous Waste Sites*, U.S. EPA, EPA-542-R-00-003, August 2000.

XIV. *Innovative Remediation and Site Characterization Technology Resources*, U.S. EPA, OSWER, EPA-542-F-01-026b, January 2001.

XV. *Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells*, U.S. EPA, EPA/600/4-89/034, 1991.

XVI. *Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers*, U.S. EPA, EPA-542-S-02-001, May 2002.

XVII. *Ground Water Issue: Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*, U.S. EPA, EPA/540/S-95/504, April 1996.

XVIII. *Superfund Ground Water Issue: Ground Water Sampling for Metals Analysis*, U.S. EPA, EPA/540/4-89/001, March 1989.

XIX. *Resources for Strategic Site Investigation and Monitoring*, U.S. EPA, OSWER, EPA-542-F-010030b, September 2001.

XX. *Region 5 Framework for Monitored Natural Attenuation Decisions for Groundwater*, U.S. EPA Region 5, September 2000.

XXI. *Ground Water Issue: Suggested Operating Procedures for Aquifer Pumping Tests*, U.S. EPA, OSWER, EPA/540/S-93/503, February 1993.

XXII. *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water*, U.S. EPA, EPA/600/R-98/128, September 1998.

XXIII. *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites,* U.S. EPA, OSWER Directive 9200.4-17P, April 21, 1999.

XXIV. *Ground Water Issue: Fundamentals of Ground-Water Modeling*, U.S. EPA, OSWER, EPA/540/S-92/005, April 1992.

XXV. *Assessment Framework for Ground-Water Model Applications*, U.S. EPA, OSWER Directive #9029.00, EPA-500-B-94-003, July 1994.

XXVI. *Ground-Water Modeling Compendium - Second Edition: Model Fact Sheets, Descriptions, Applications and Cost Guidelines*, U.S. EPA, EPA-500-B-94-004, July 1994.

XXVII.*A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*, U.S. EPA, Office of Solid Waste and Emergency Response, OSWER Directive No. 9200.1-23P, EPA 540-R-98-031, July 1999.

XXVIII.*Region 5 Instructions on the Preparation of A Superfund Division Quality Assurance Project Plan Based on EPA QA/R-5, Revision 0*, U.S. EPA Region 5, June 2000.

XXIX. *Guidance for the Data Quality Objectives Process (QA-G-4)*, U.S. EPA, EPA/600/R-96/055, August 2000.

XXX. *Guidance for the Data Quality Objectives Process for Hazardous Waste Sites (QA/G-4HW)*, U.S. EPA, EPA/600/R-00/007, January 2000.

XXXI. *Guidance for the Preparation of Standard Operating Procedures (QA-G-6)*, U.S. EPA, EPA/240/B-01/004, March 2001.

XXXII.*EPA Requirements for Quality Management Plans (QA/R-2)*, U.S. EPA, EPA/240/B-01/002, March 2001.

XXXIII.*EPA Requirements for QA Project Plans (QA/R-5)*, U.S. EPA, EPA/240/B-01/003, March 2001.

XXXIV.*Guidance for Quality Assurance Project Plans (QA/G-5)*, U.S. EPA, EPA/600/R-98/018, February 1998.

XXXV.*Users Guide to the EPA Contract Laboratory Program*, U.S. EPA, Sample Management Office, OSWER Directive No. 9240.0-01D, January 1991.

XXXVI.*Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities*, U.S. EPA, EPA/600/R-93/182, 1993.

XXXVII.*Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A),* U.S. EPA, EPA/540/1-89/002, December 1989.

XXXVIII. *Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals)*, U.S. EPA, EPA/540/R-92/003, OSWER Publication 9285.7-01B, December 1991.

XXXIX. *Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part C - Risk Evaluation of Remedial Alternatives)*, U.S. EPA, Office of Emergency and Remedial Response, Publication 9285.7-01C, October, 1991.

XL. *Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part D - Standardized Planning, Reporting, and Review of Superfund Risk Assessments)*, U.S. EPA, Office of Emergency and Remedial Response, Publication 9285.7-47, December 2001.

XLI. *Risk Assessment Guidance for Superfund: Volume III - Part A, Process for Conducting Probabilistic Risk Assessment*, U.S. EPA, OSWER Publication 9285.7-45, EPA-540-R-02-002, December 2001.

XLII. *Policy for Use of Probabilistic in Risk Assessment at the U.S. Environmental Protection Agency*, U.S. EPA, Office of Research and Development, 1997.

XLIII. *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors*, U.S. EPA, OSWER Directive 9285.6-03, March 25, 1991.

XLIV. *Exposure Factors Handbook*, Volumes I, II, and III, U.S. EPA, EPA/600/P-95/002Fa,b,c, August 1997.

XLV. *Supplemental Guidance to RAGS: Calculating the Concentration Term*, U.S. EPA, OSWER Publication 9285.7-08I, May 1992.

XLVI. *Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities*, U.S. EPA, OSWER Directive 9355.4-12, EPA/540/F-94/043, July 14, 1994.

XLVII. *Clarification to the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities*, U.S. EPA, OSWER Directive 9200.4-27, EPA/540/F-98/030, August 1998.

XLVIII. *Guidance Manual for the Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children*, U.S. EPA, OSWER Publication 9285.7-15-1, February 1994; and associated, clarifying Short Sheets on IEUBK Model inputs, including but not limited to OSWER 9285.7-32 through 34, as listed on the OSWER lead internet site at www.epa.gov/superfund/programs/lead/prods.htm,

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APPENDIX B

SITE MAP

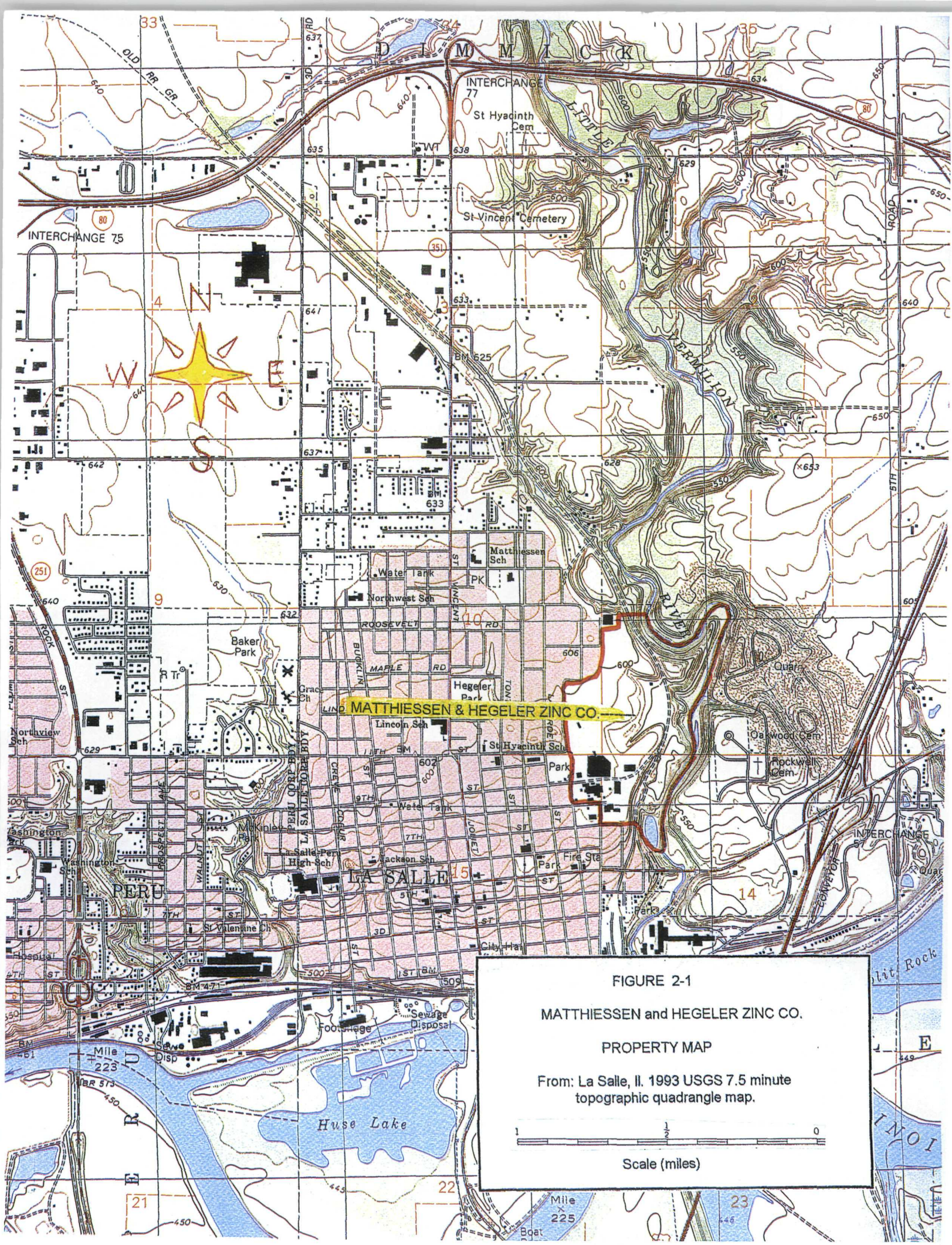

FIGURE 2-1

MATTHIESSEN and HEGELER ZINC CO.

PROPERTY MAP

From: La Salle, Il. 1993 USGS 7.5 minute topographic quadrangle map.

1 ½ 0

Scale (miles)